

FIG. 1

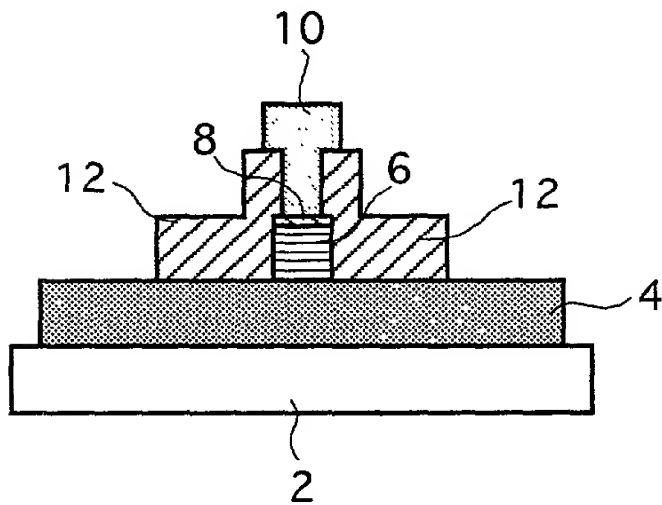
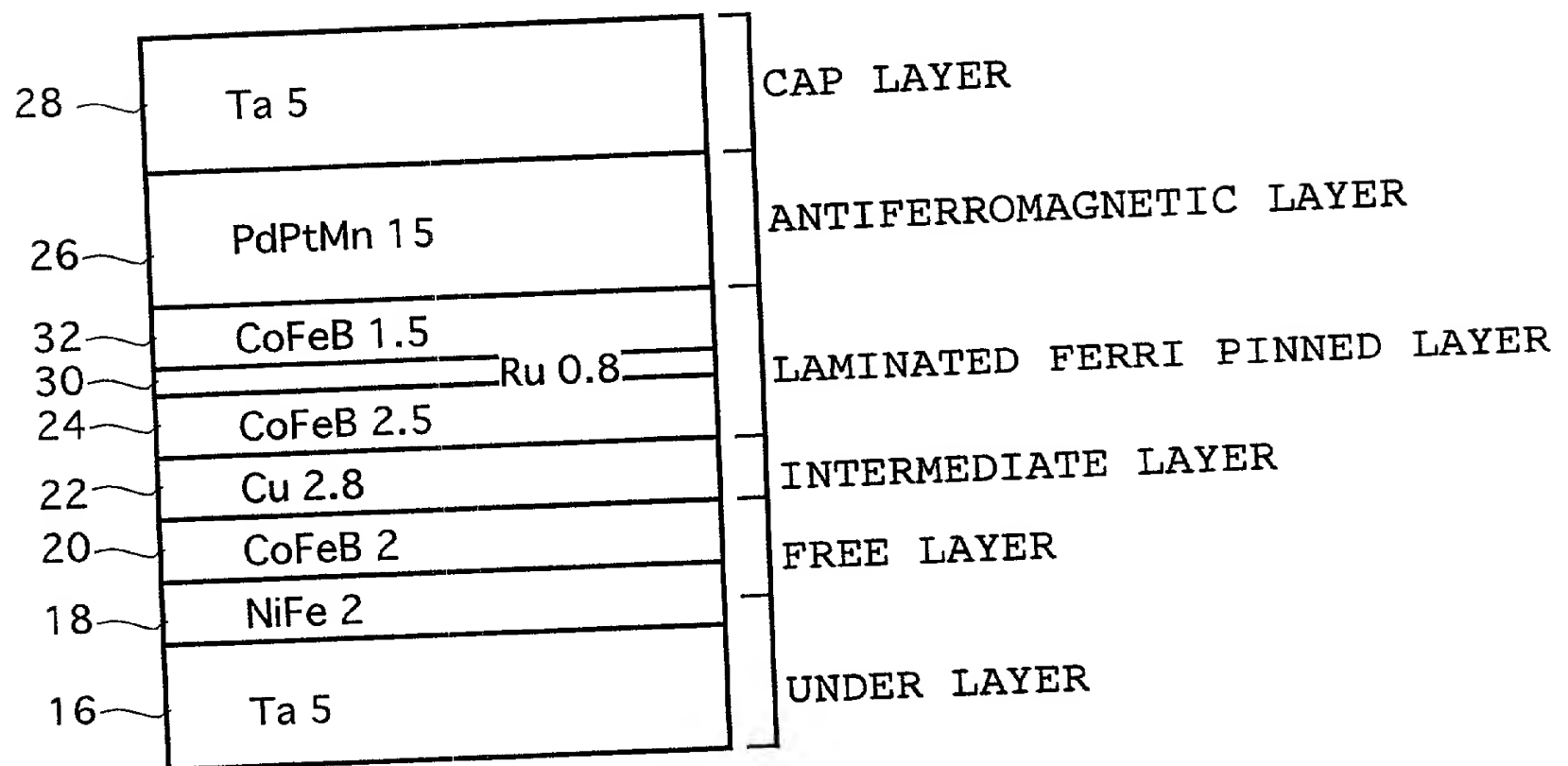


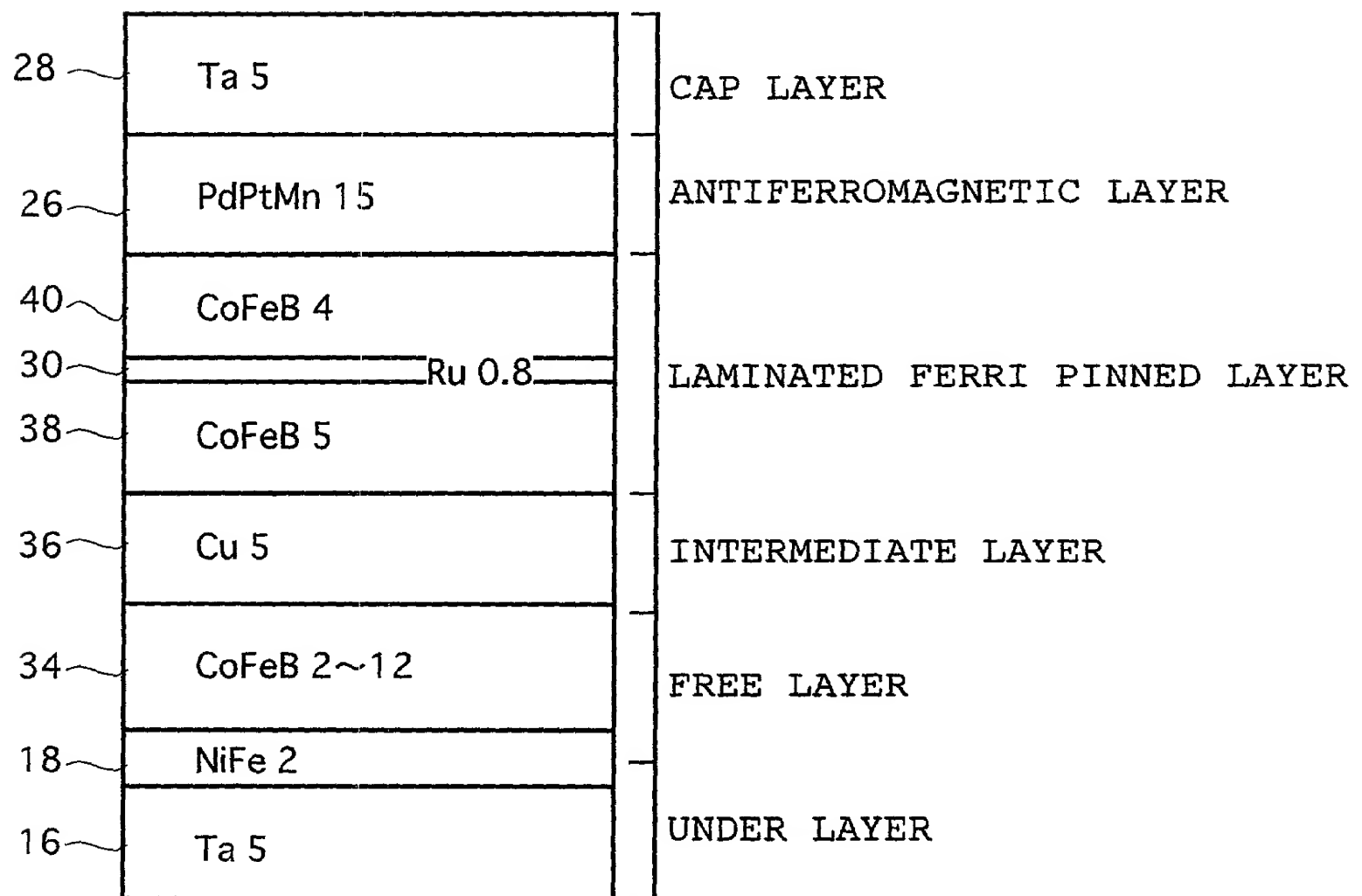
FIG. 2

28	Ta 5	CAP LAYER
26	PdPtMn 15	ANTIFERROMAGNETIC LAYER
24	CoFeB 2.5	PINNED LAYER
22	Cu 2.8	INTERMEDIATE LAYER
20	CoFeB 2	FREE LAYER
18	NiFe 2	
16	Ta 5	UNDER LAYER

# FIG. 3

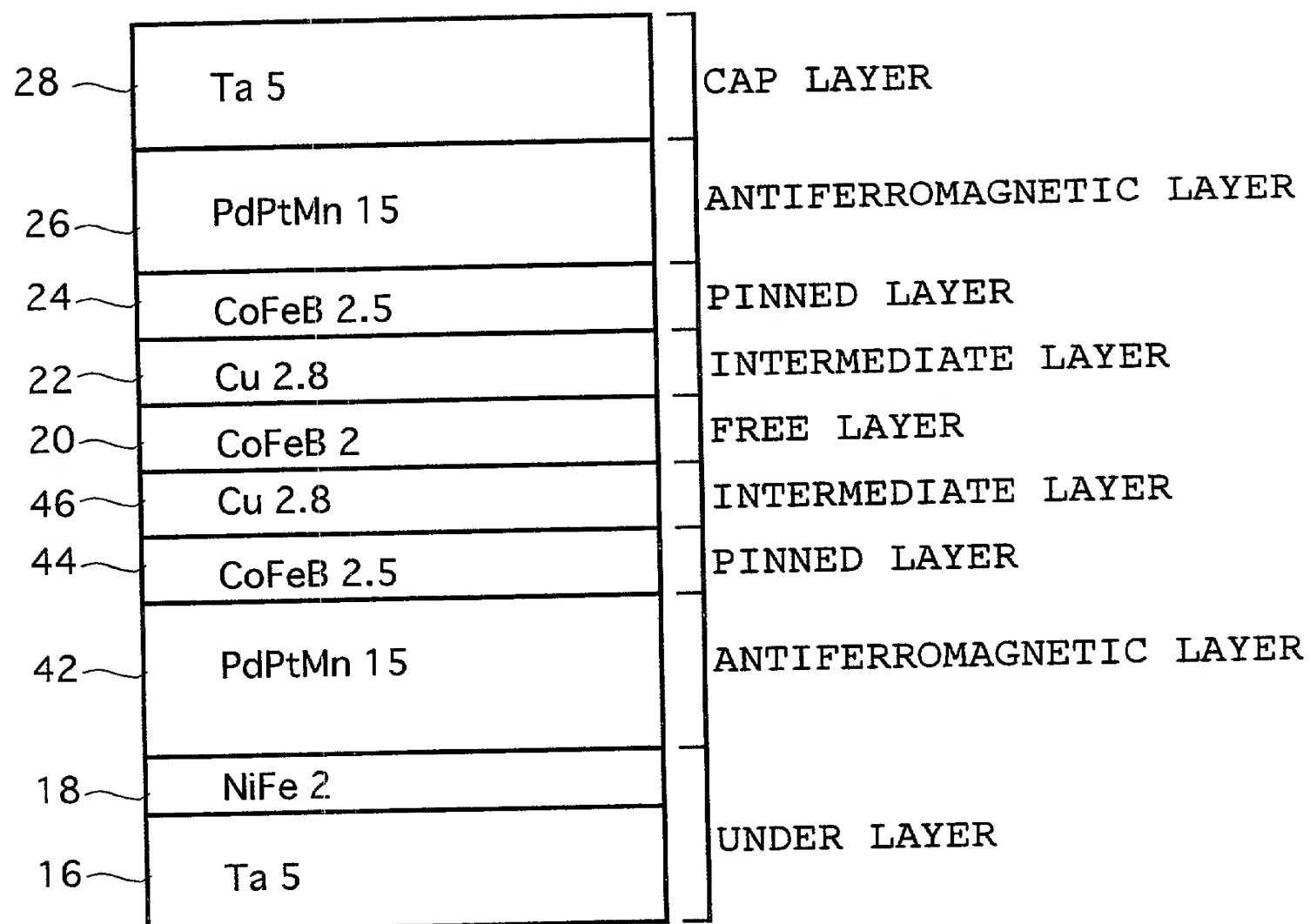


# FIG. 4

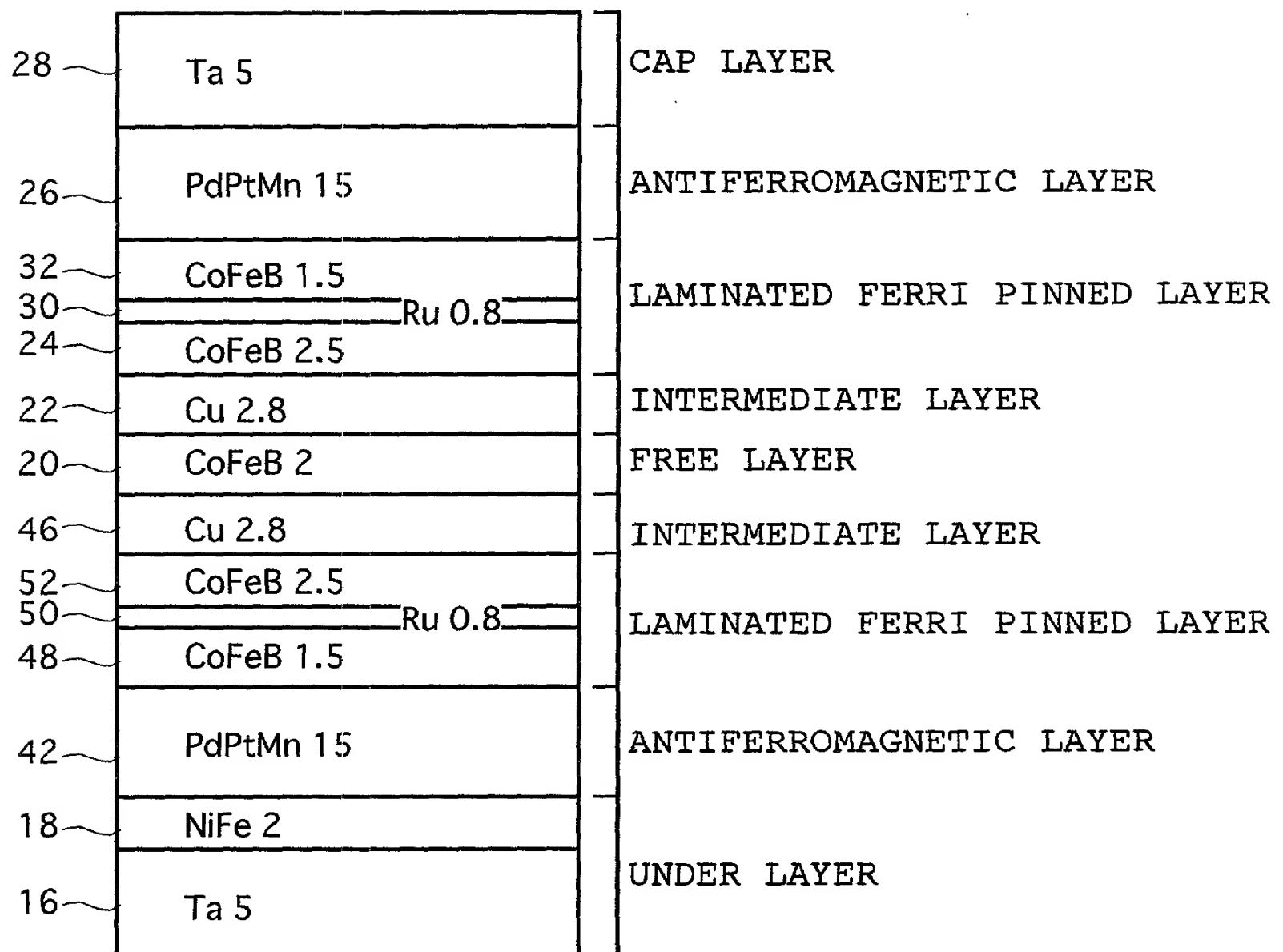


Ref. No. 3531.65364

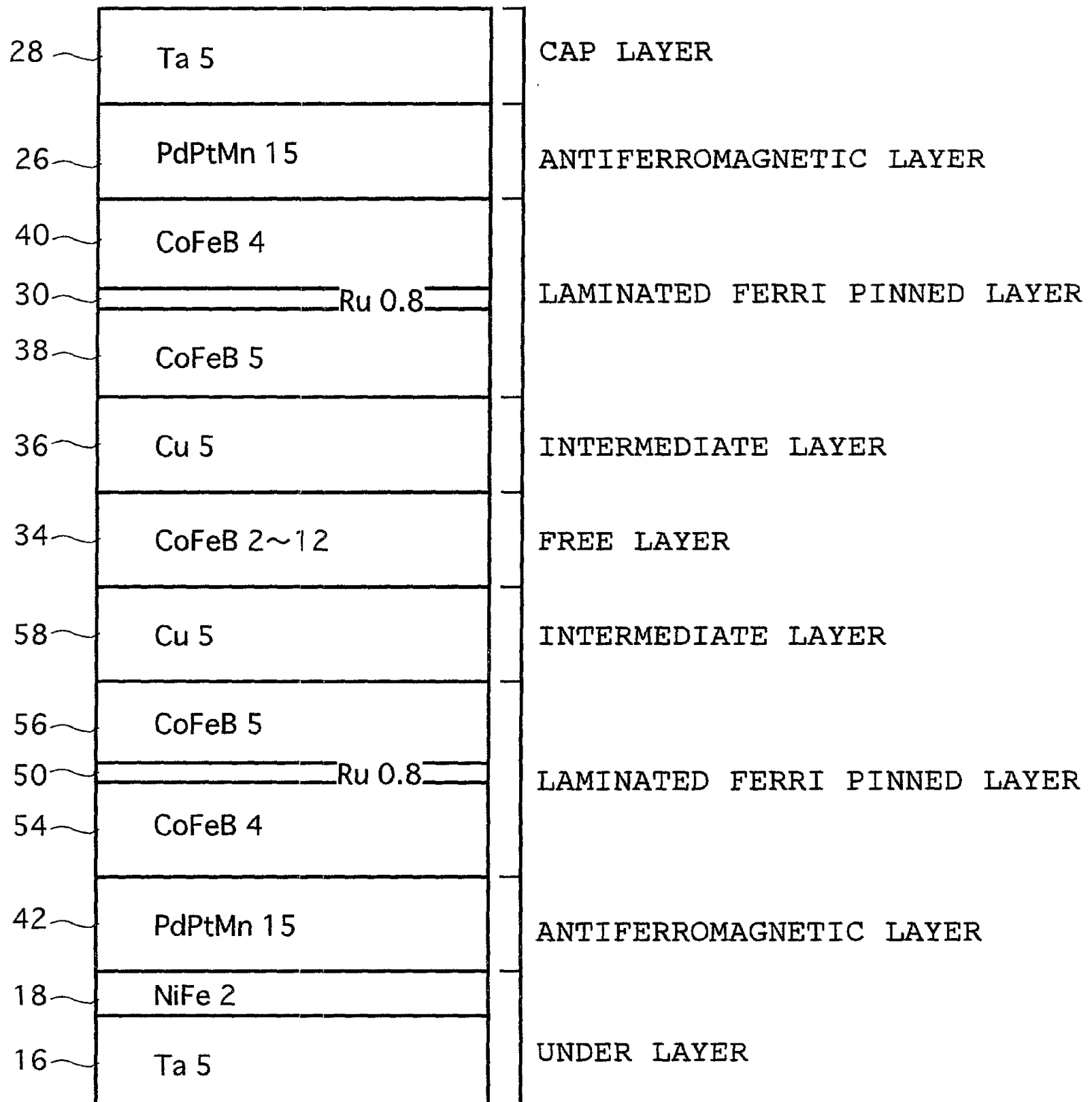
# FIG. 5



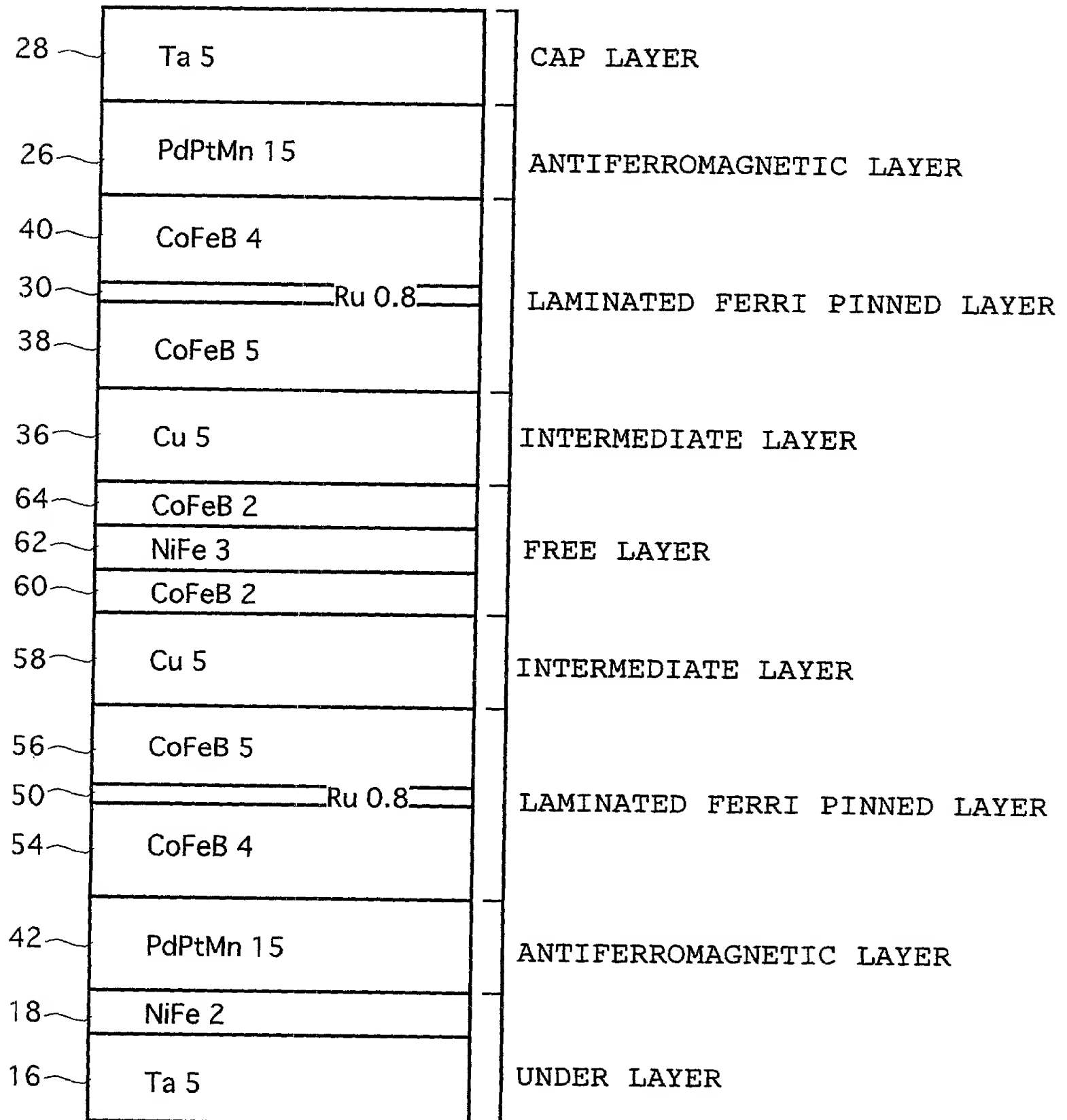
# FIG. 6



# FIG. 7



# FIG. 8



# FIG. 9

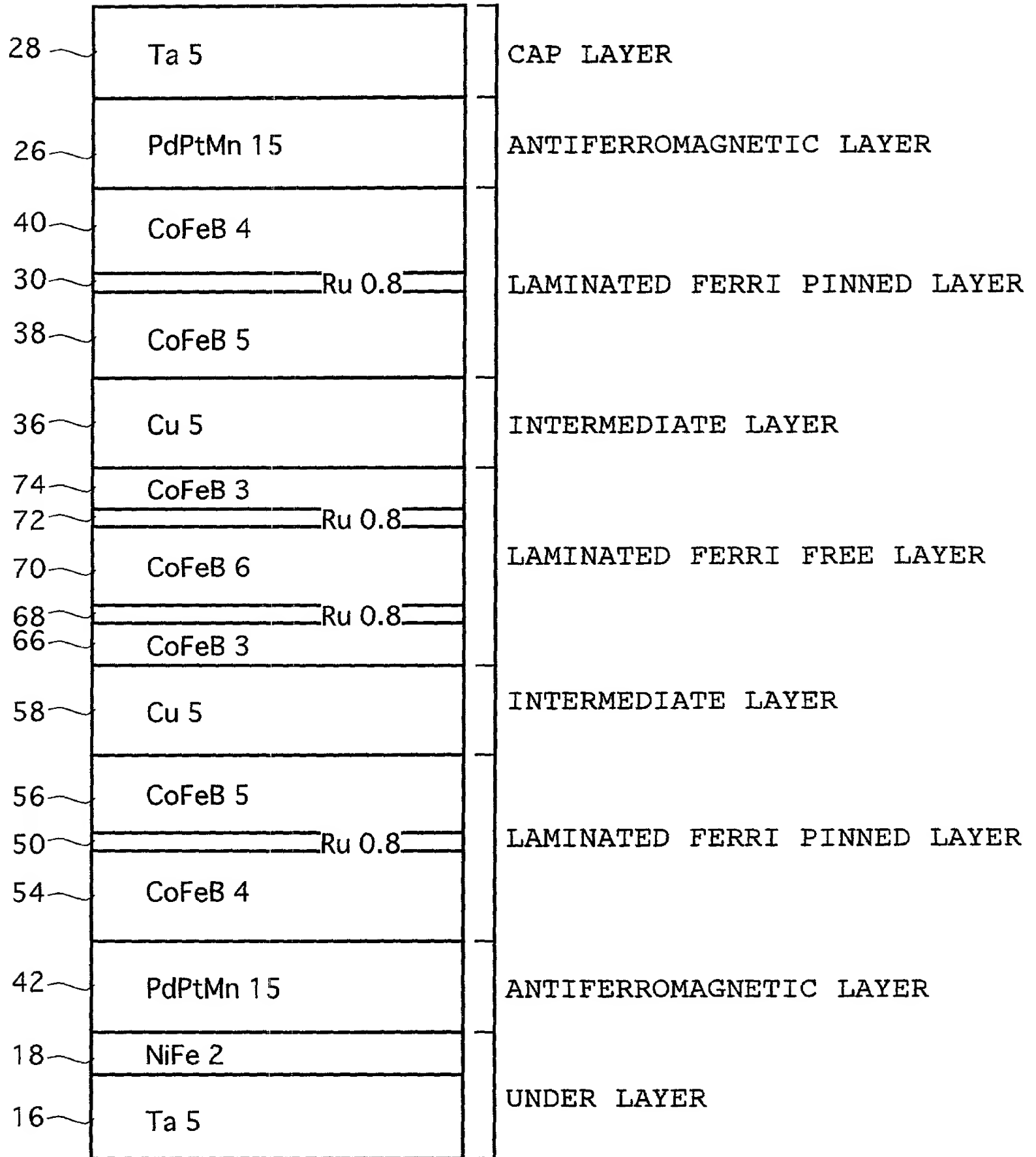




FIG. 10A

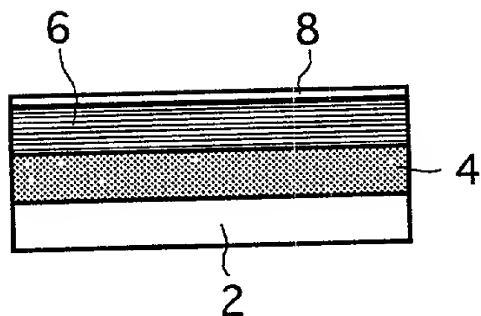


FIG. 10A'

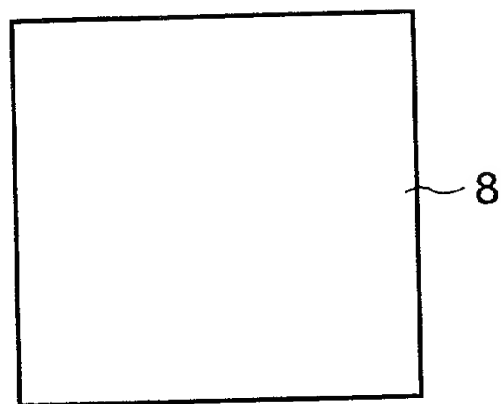


FIG. 10B

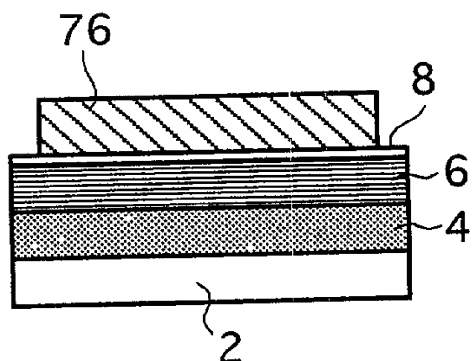


FIG. 10B'

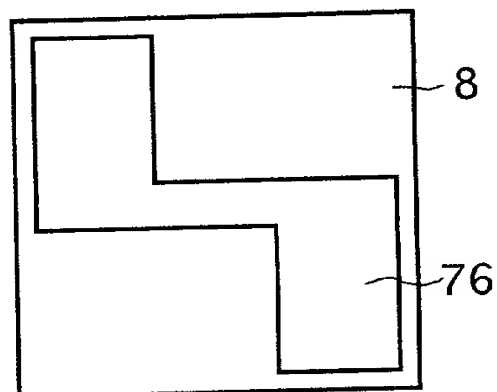


FIG. 10C

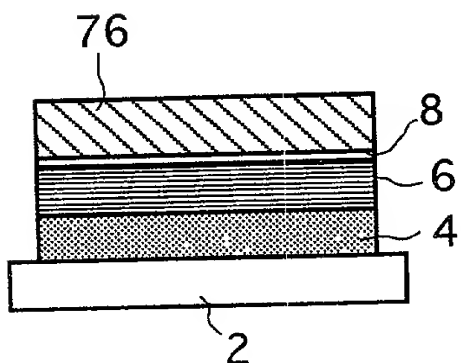


FIG. 10C'

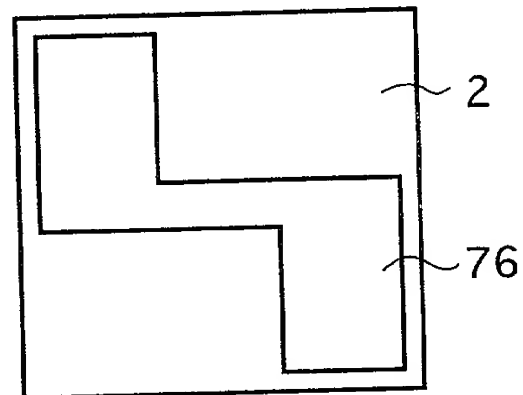


FIG. 10D

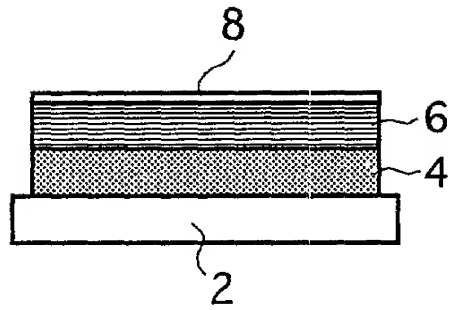


FIG. 10D'

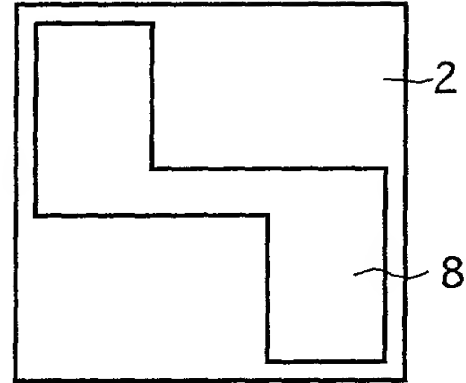


FIG. 10E

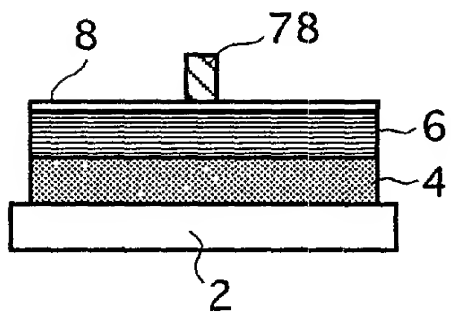


FIG. 10E'

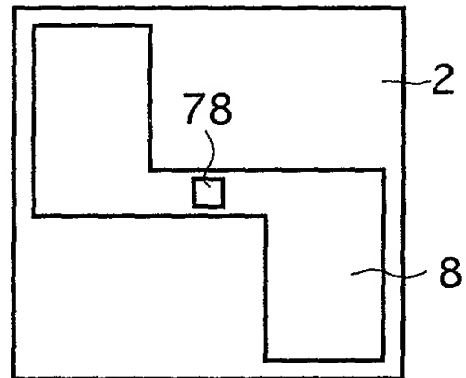


FIG. 10F

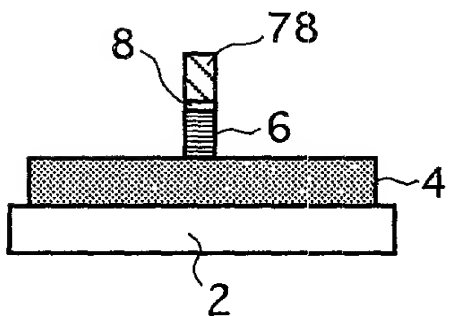


FIG. 10F'

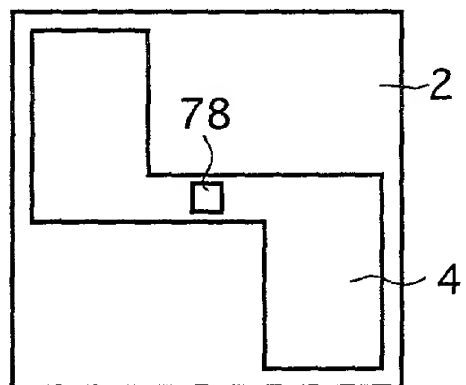


FIG. 10G

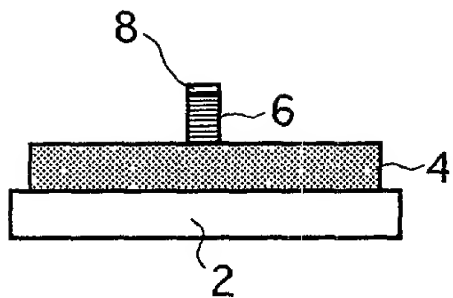


FIG. 10G'

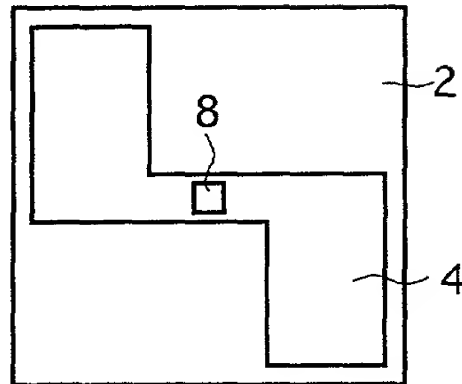


FIG. 10H

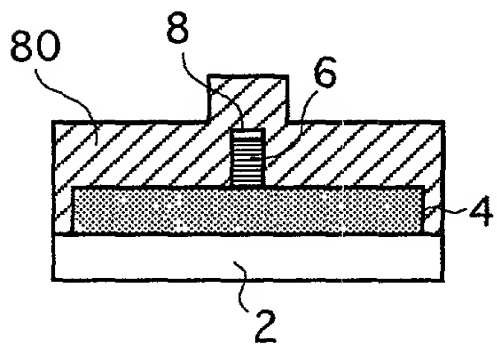


FIG. 10H'

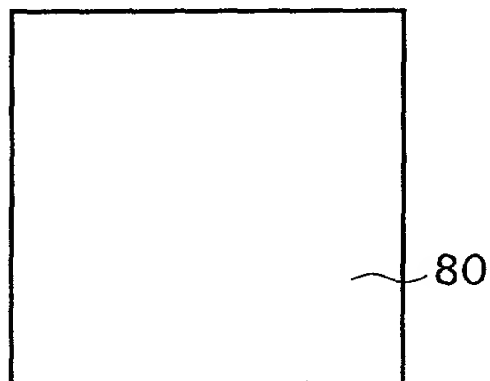


FIG. 10I

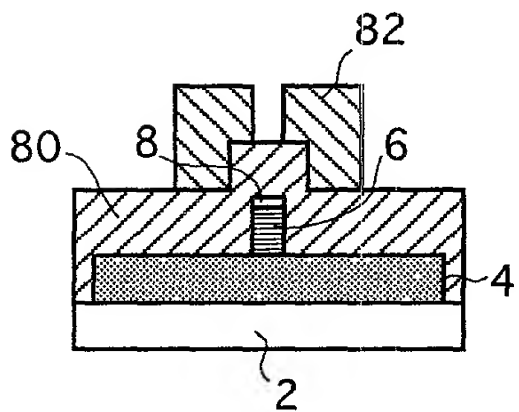


FIG. 10I'

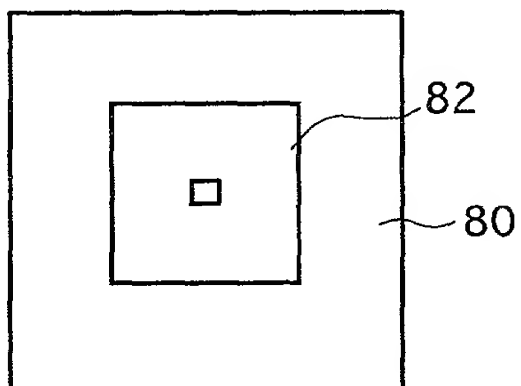


FIG. 10J

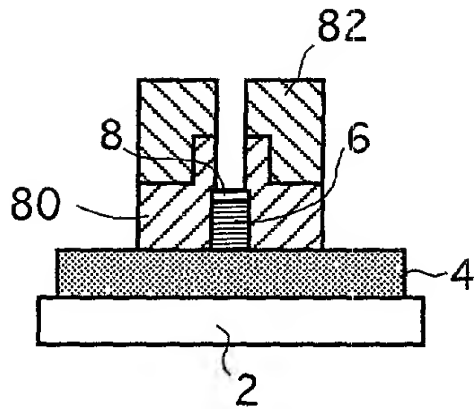


FIG. 10J'

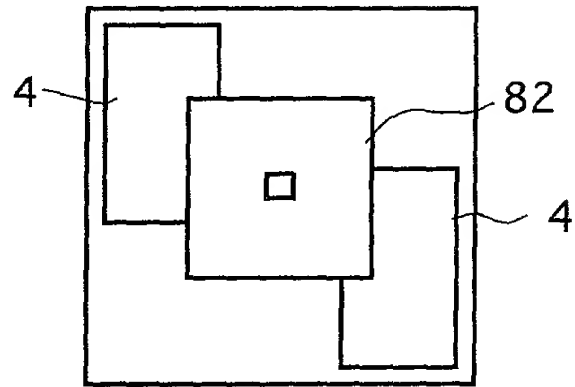


FIG. 10K

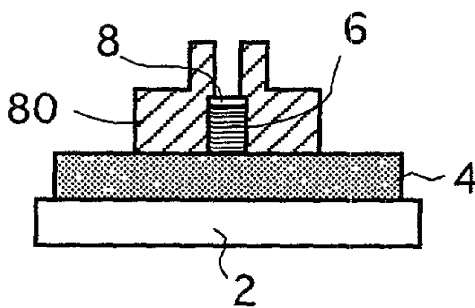


FIG. 10K'

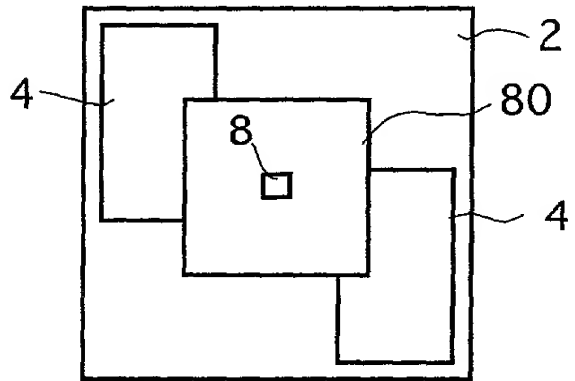


FIG. 10L

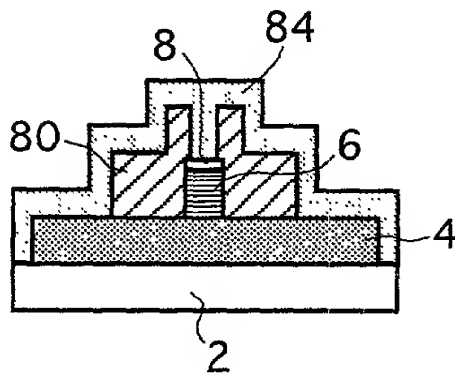


FIG. 10L'

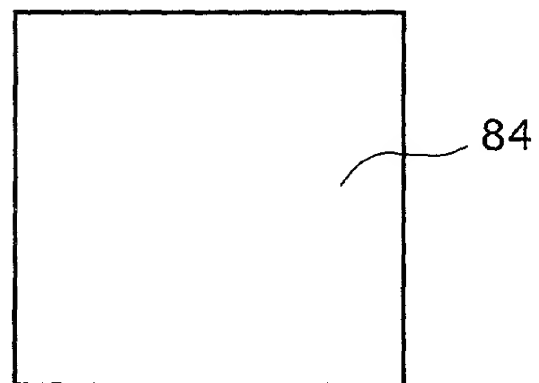


FIG. 10M

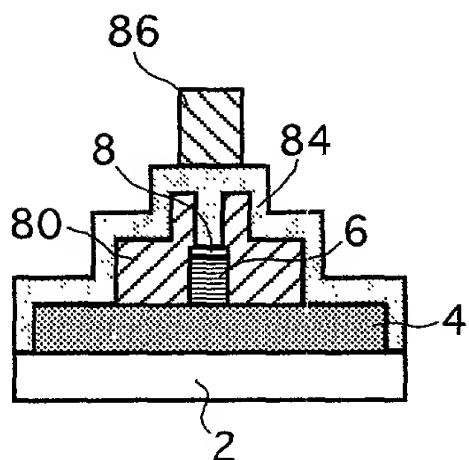


FIG. 10M'

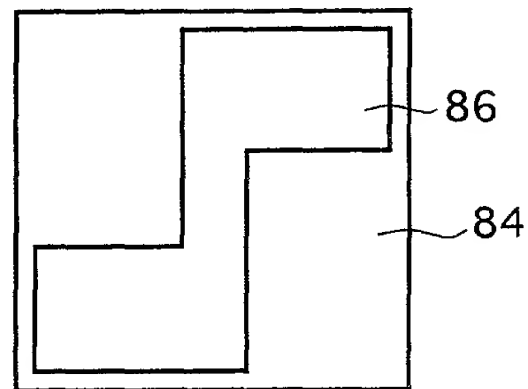


FIG. 10N

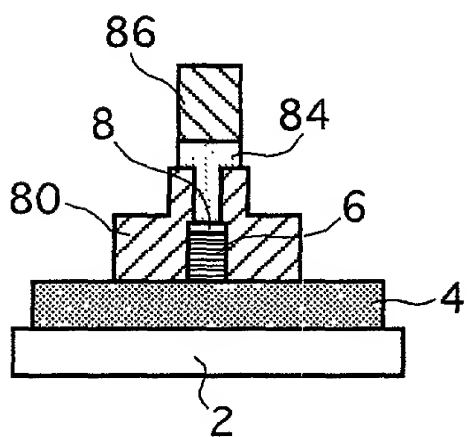


FIG. 10N'

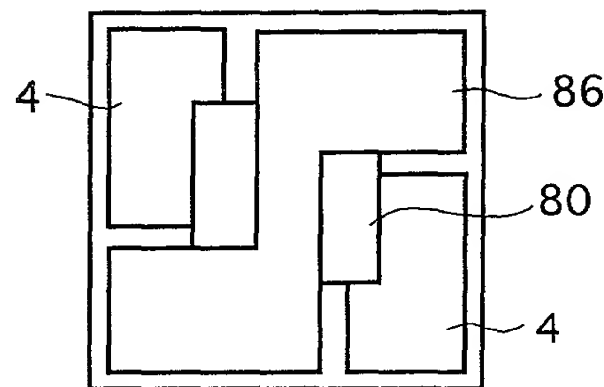


FIG. 10P

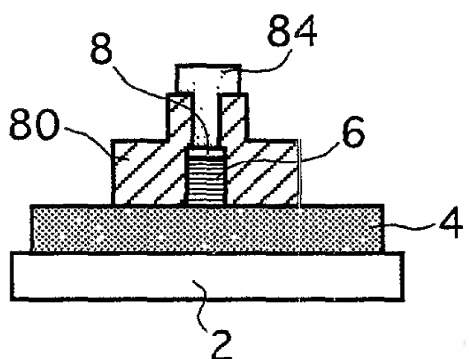
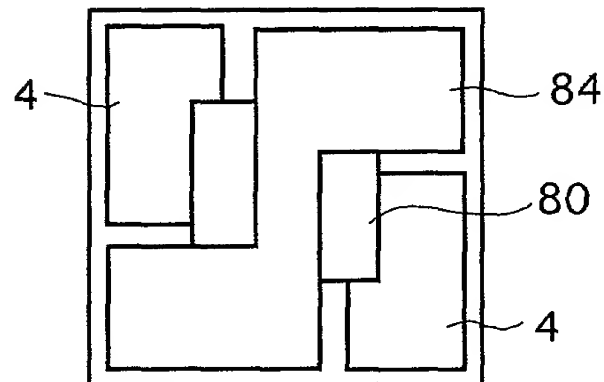
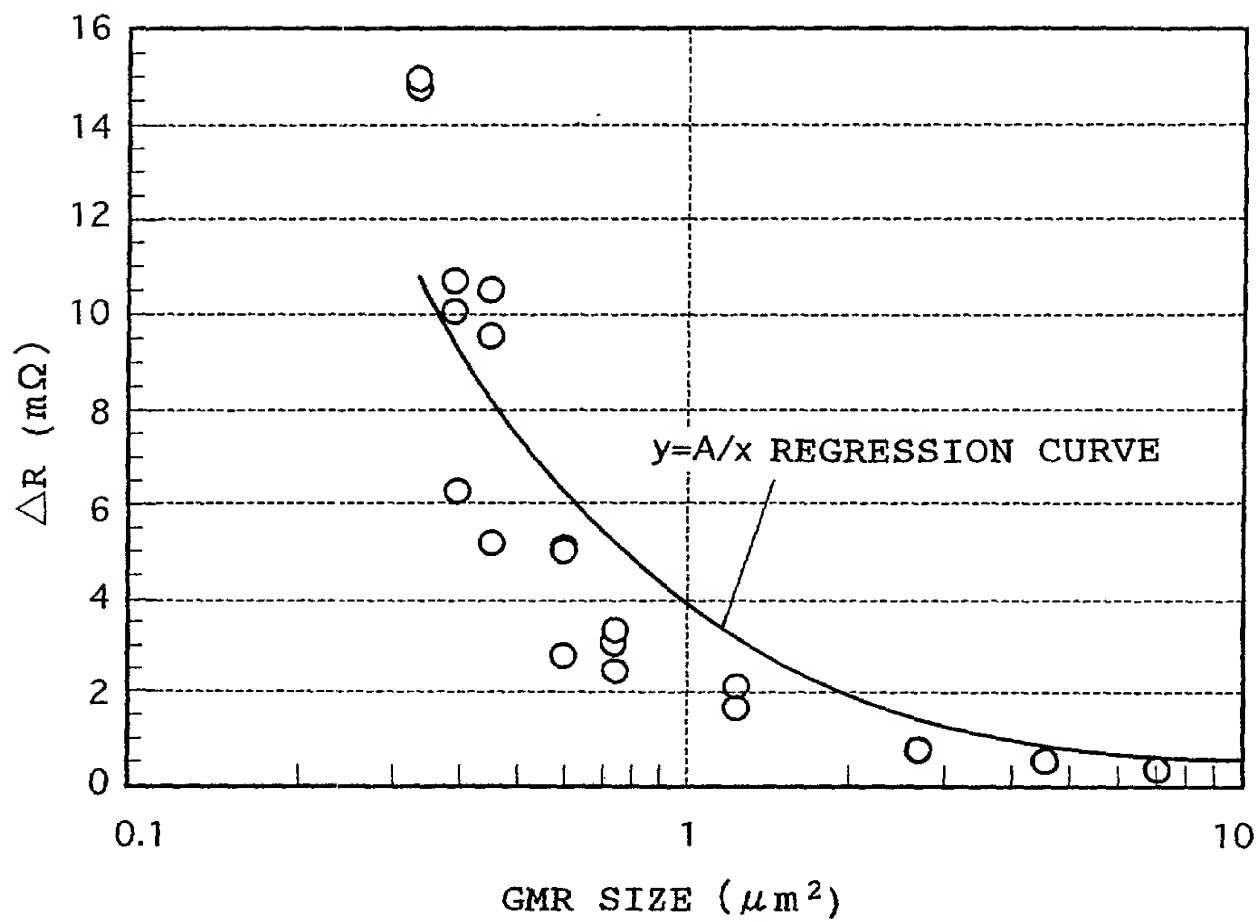


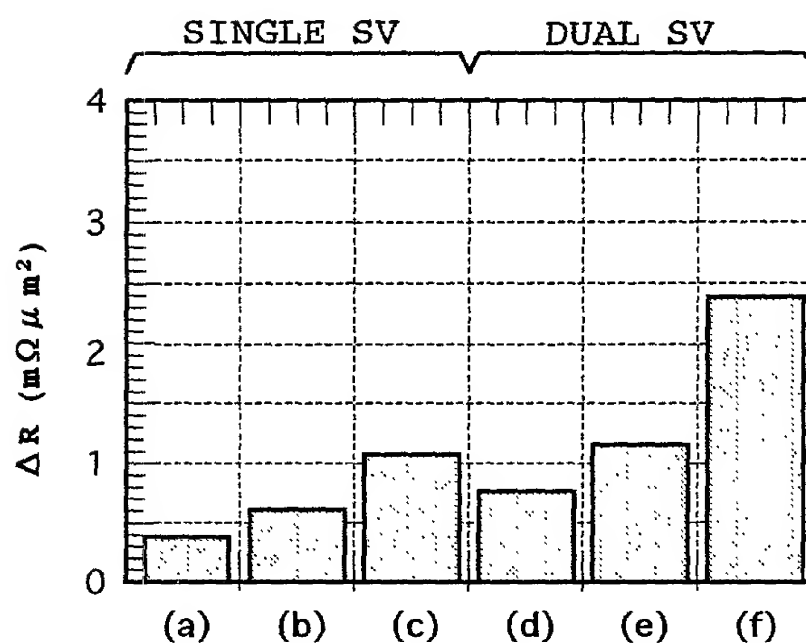
FIG. 10P'



# FIG. 11



# FIG. 12



- (a): CIP OPTIMUM LAYER THICKNESS
- (b): LAMINATED FERRI
- (c): INCREASED THICKNESSES OF PINNED LAYER AND INTERMEDIATE LAYER
- (d): CIP OPTIMUM LAYER THICKNESS
- (e): LAMINATED FERRI
- (f): INCREASED THICKNESSES OF PINNED LAYER AND INTERMEDIATE LAYER

# FIG. 13

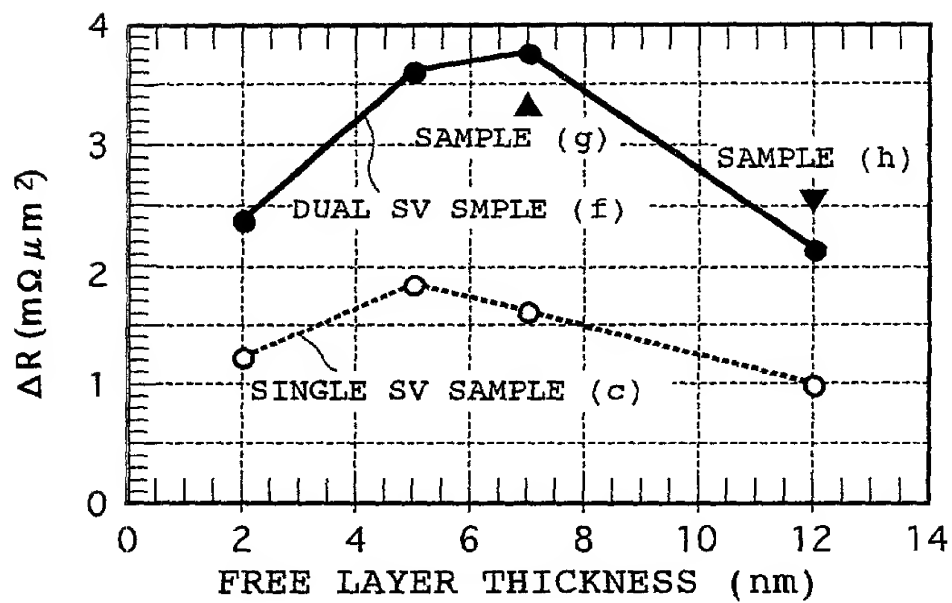




FIG. 14A

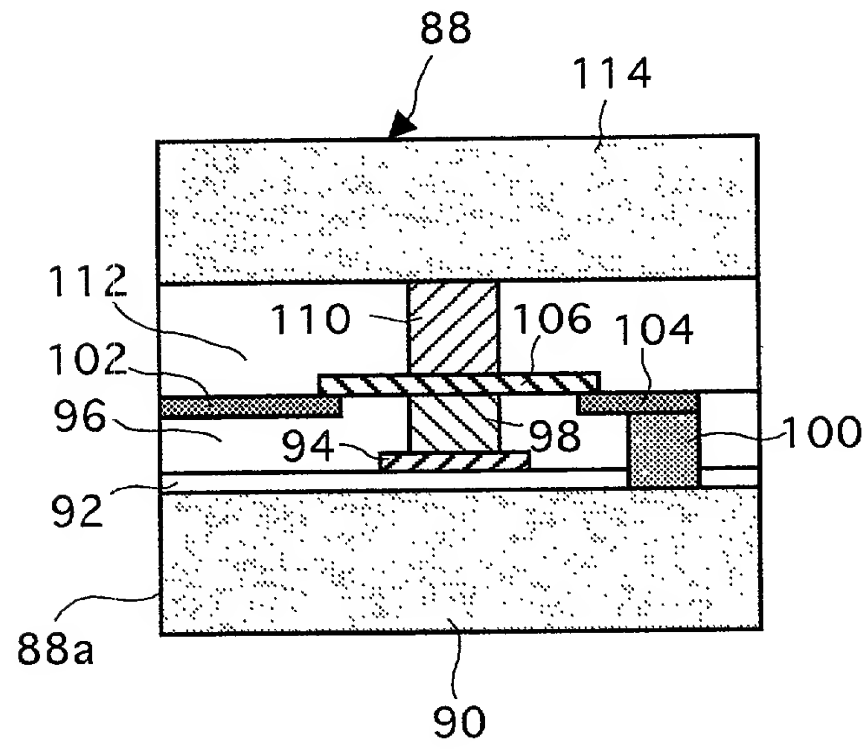


FIG. 14B

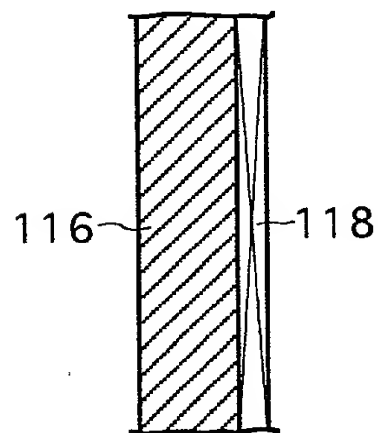


FIG. 15A

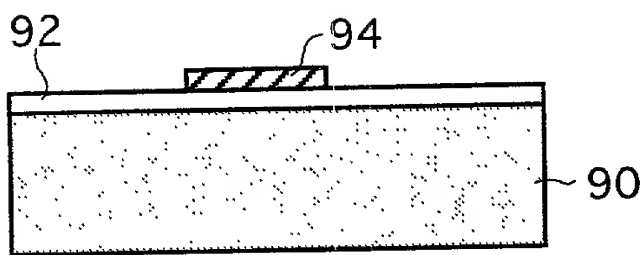


FIG. 15A'

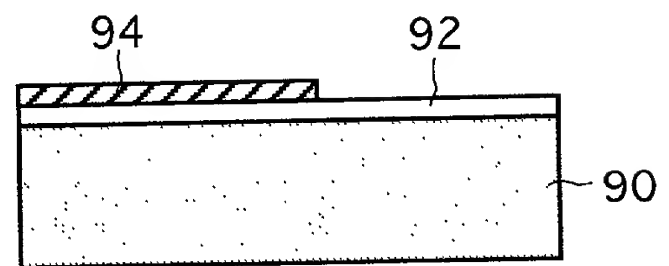


FIG. 15B

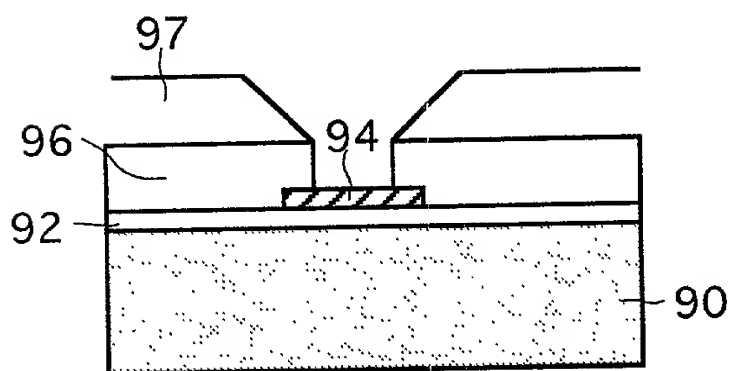


FIG. 15B'

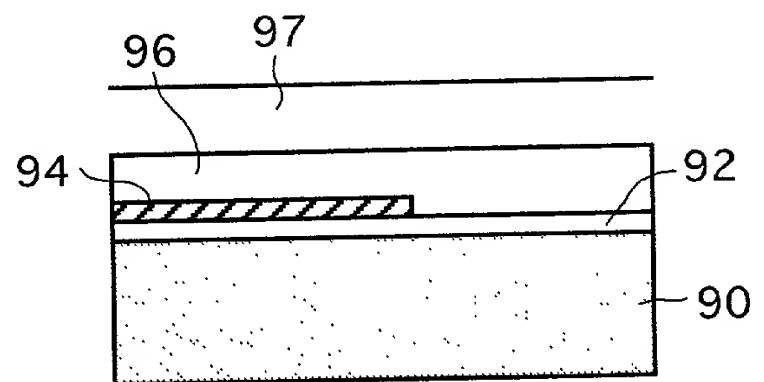


FIG. 15C

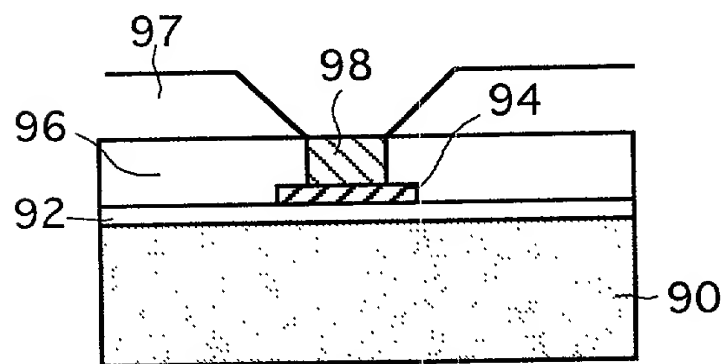


FIG. 15C'

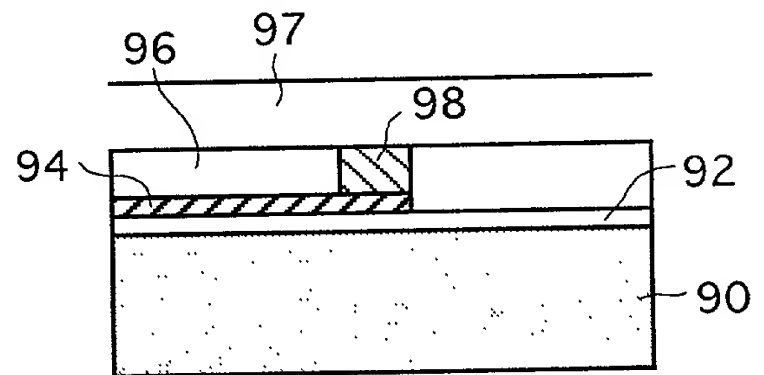


FIG. 15D

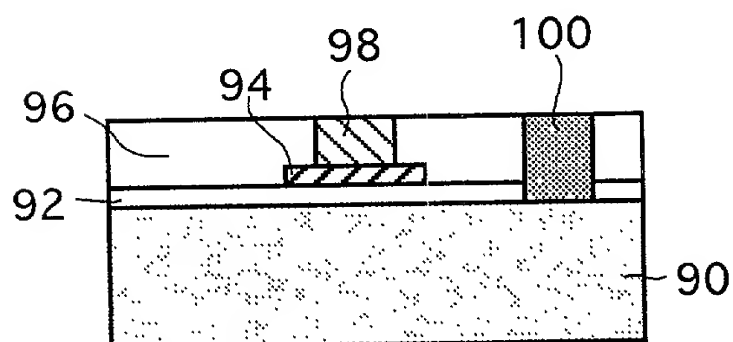


FIG. 15D'

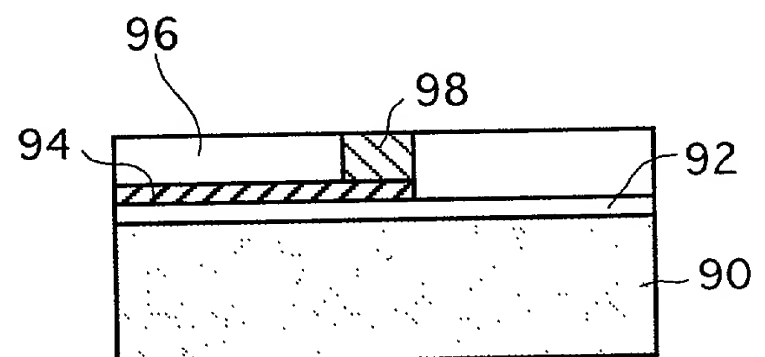


Fig. 1 is a cross-sectional view of a semiconductor device. The device includes a substrate 90, a thin layer 92, a gate stack 94, a gate electrode 96, a gate insulator 98, a gate contact 100, a gate pad 102, and a gate lead 104.

A cross-sectional view of a substrate assembly 90. The assembly includes a substrate 92 with a top surface 94. A thin layer 96 is disposed on the top surface 94. A rectangular feature 98, filled with diagonal hatching, is located on the top surface 94. The substrate 92 is shown with a dotted pattern.

A cross-sectional view of a semiconductor device. It features a substrate 90 with a dotted pattern. A thin layer 92 is on top of the substrate. A layer 94 with diagonal hatching is on top of layer 92. A rectangular block 96 is on top of layer 94. A trapezoidal structure 106 is on top of block 96. The top surface of the trapezoid is labeled 107. A side surface of the trapezoid is labeled 108. A layer 98 with diagonal hatching is on the side of block 96, adjacent to the trapezoid.

[illegible]

FIG. 15H

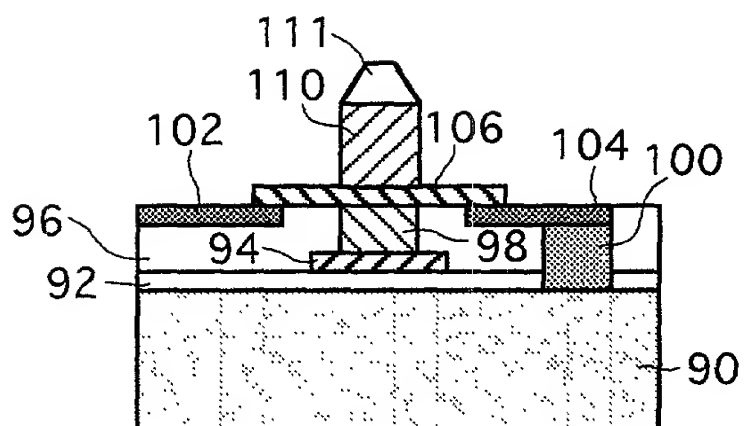


FIG. 15H'

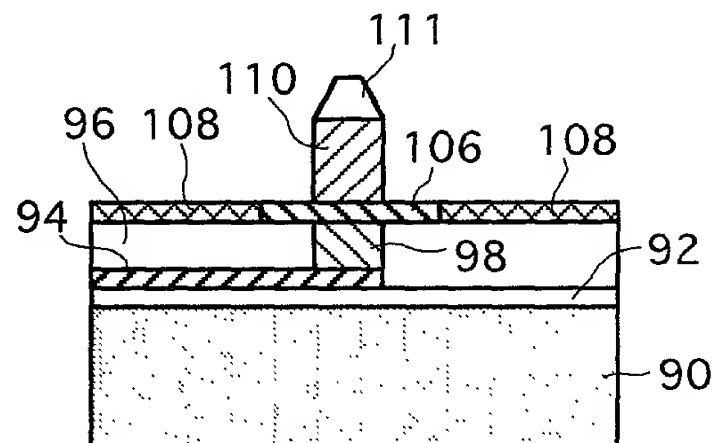


FIG. 15I

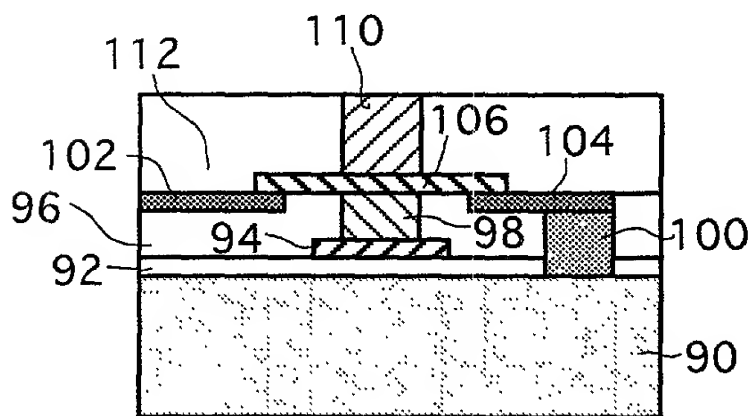


FIG. 15I'

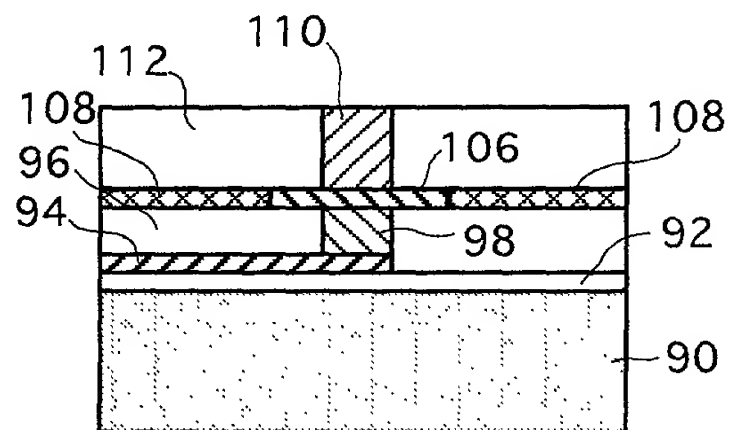


FIG. 15J

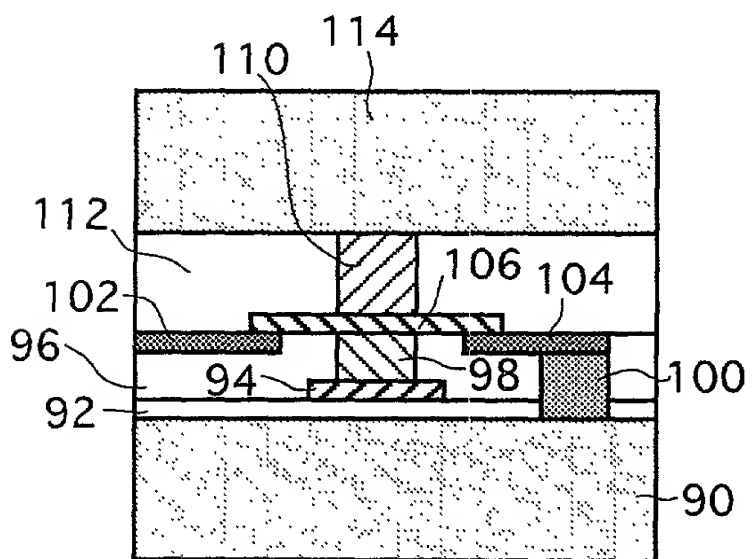


FIG. 15J'

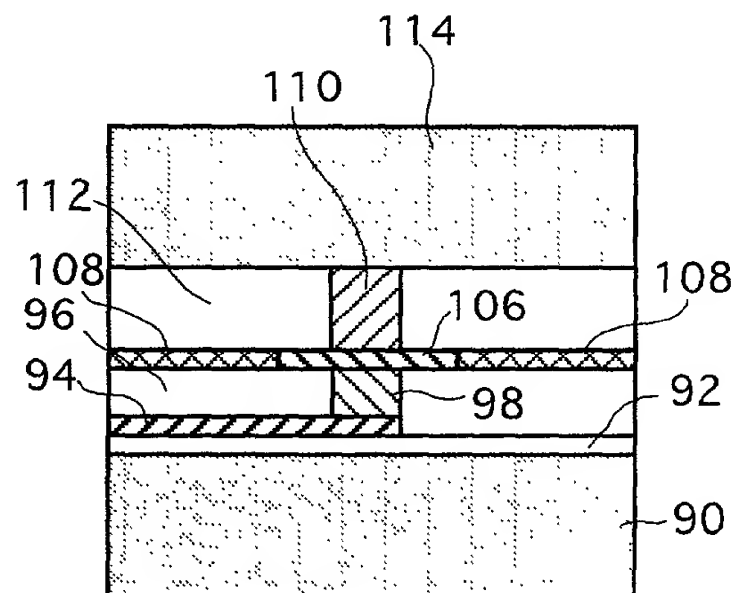


FIG. 15H

FIG. 16A

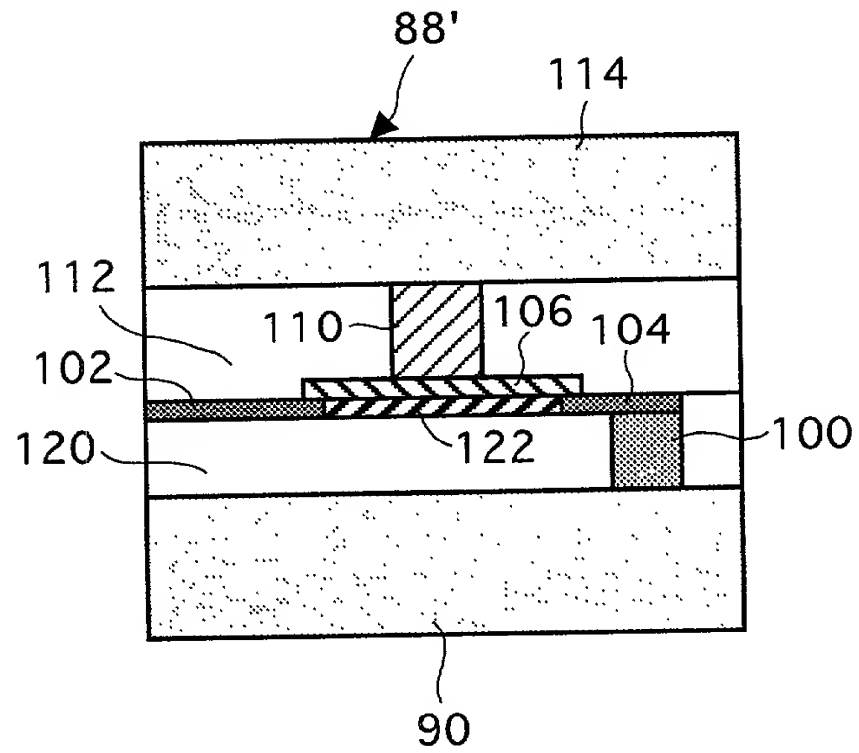


FIG. 16B

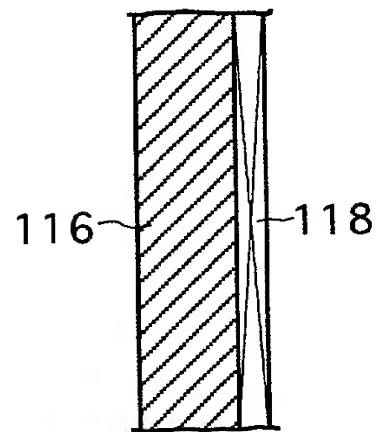


FIG. 17A

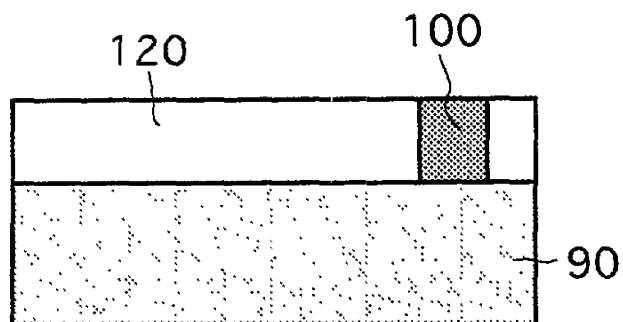


FIG. 17A'

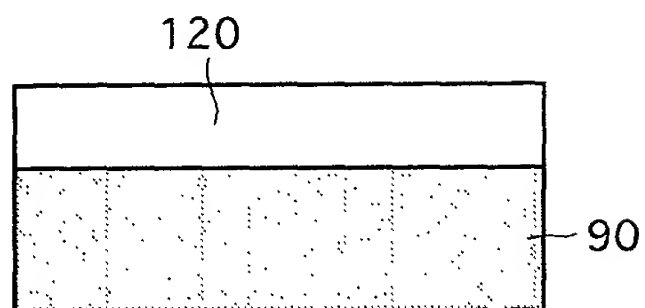


FIG. 17B

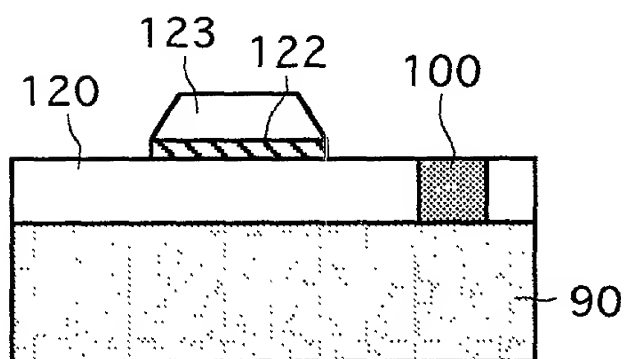


FIG. 17B'

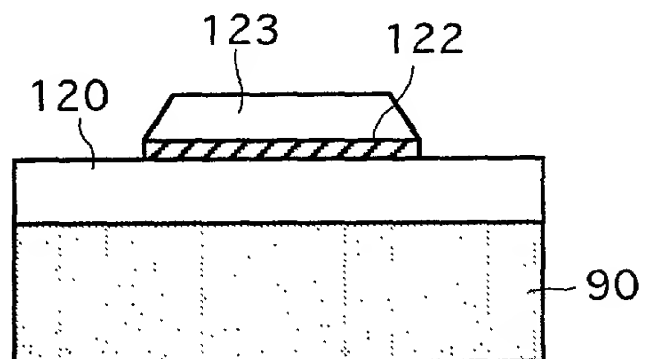


FIG. 17C

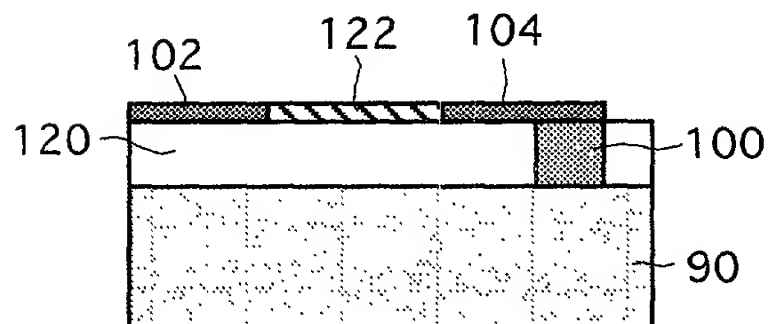


FIG. 17C'

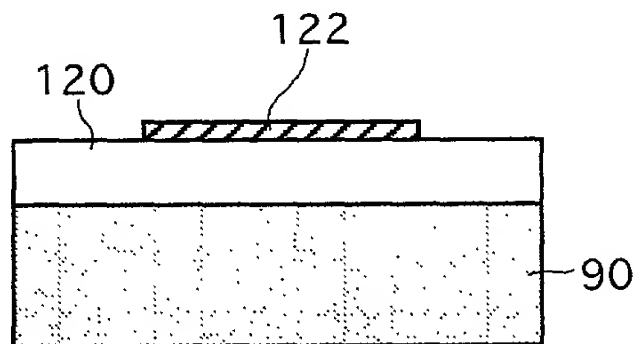


FIG. 17D

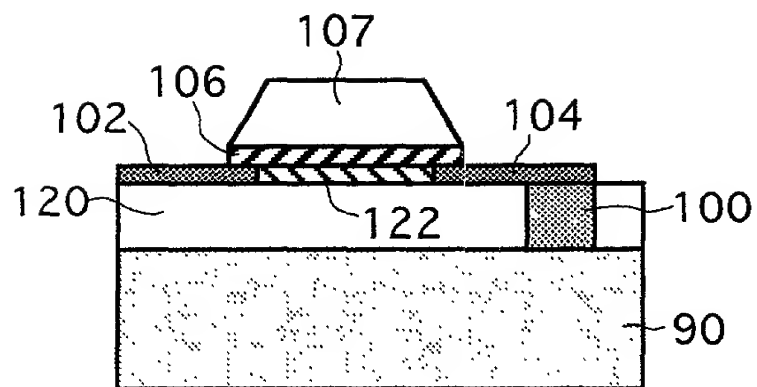


FIG. 17D'

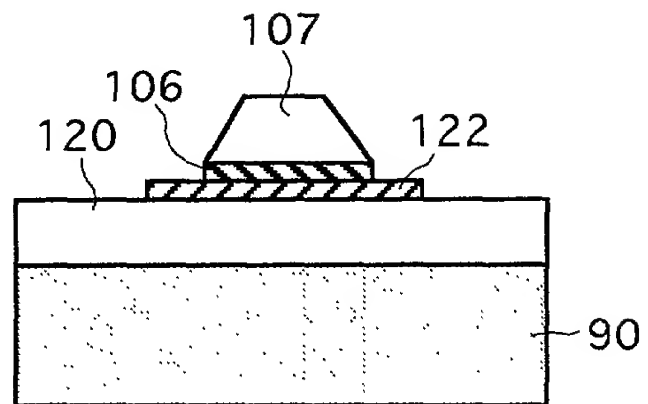


FIG. 17E

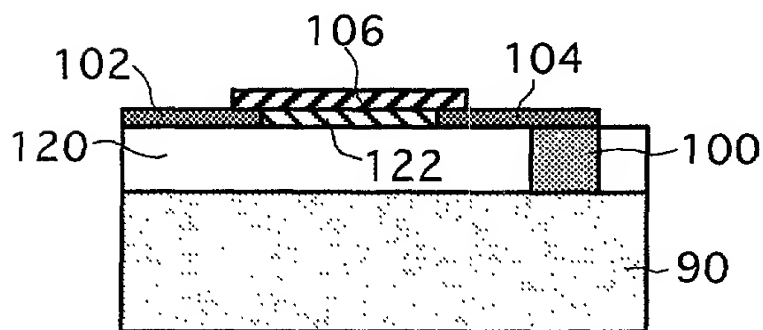


FIG. 17E'

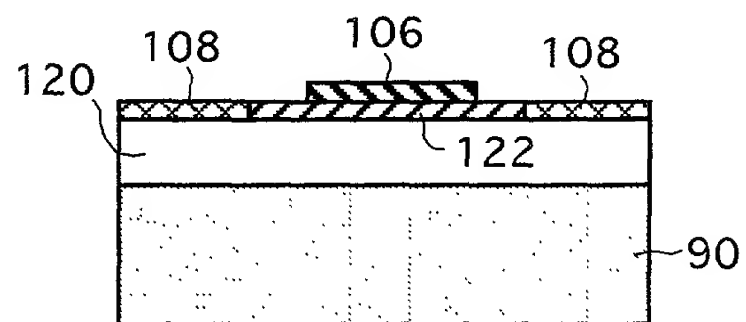


FIG. 17F

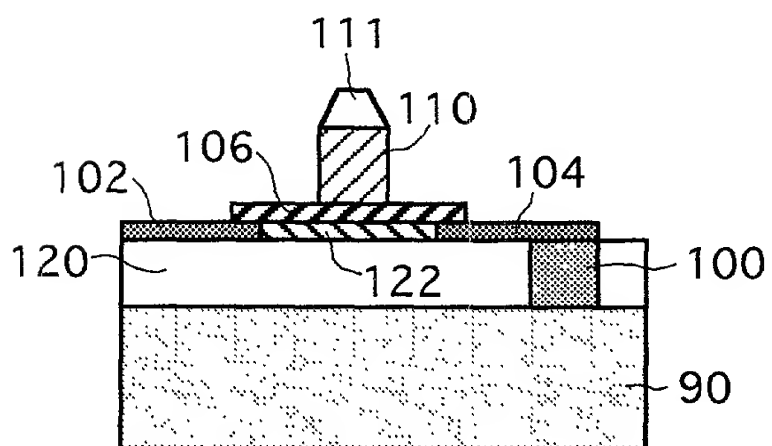


FIG. 17F'

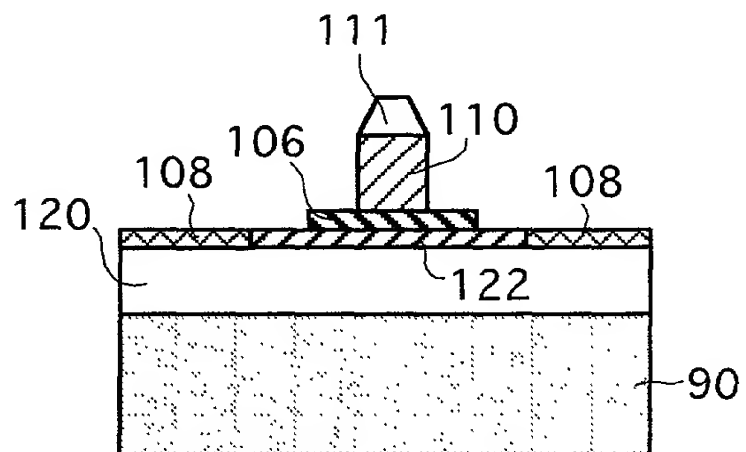


FIG. 17G

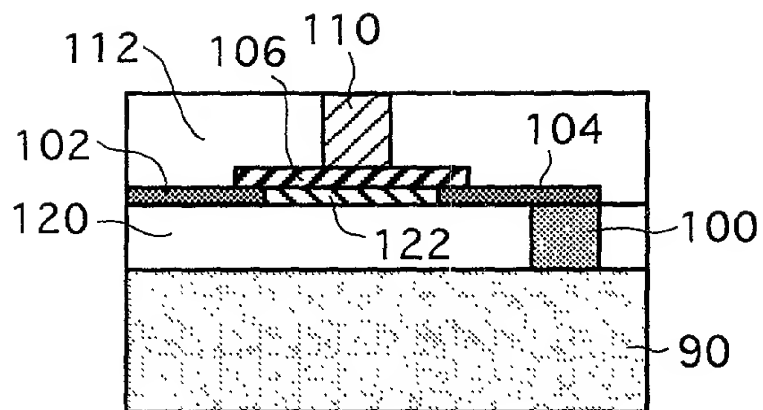


FIG. 17G'

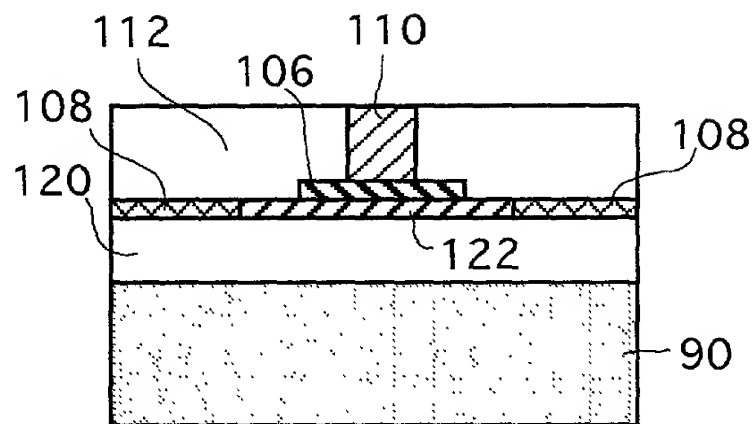


FIG. 17H

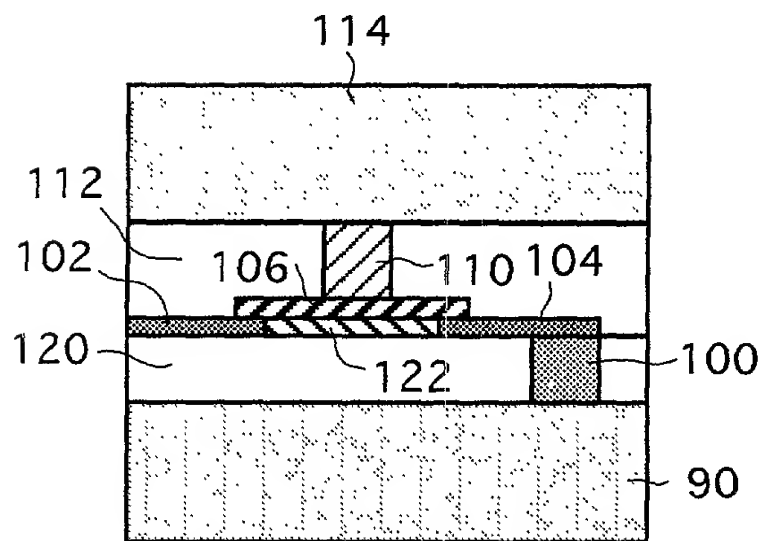


FIG. 17H'

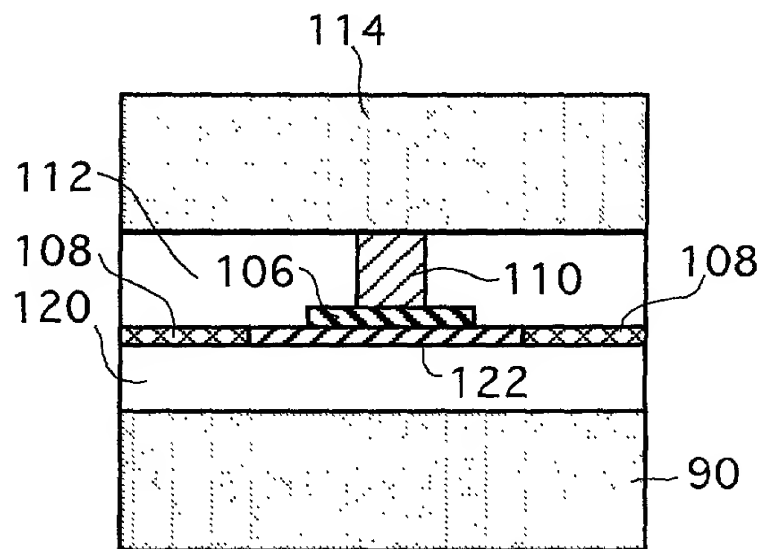


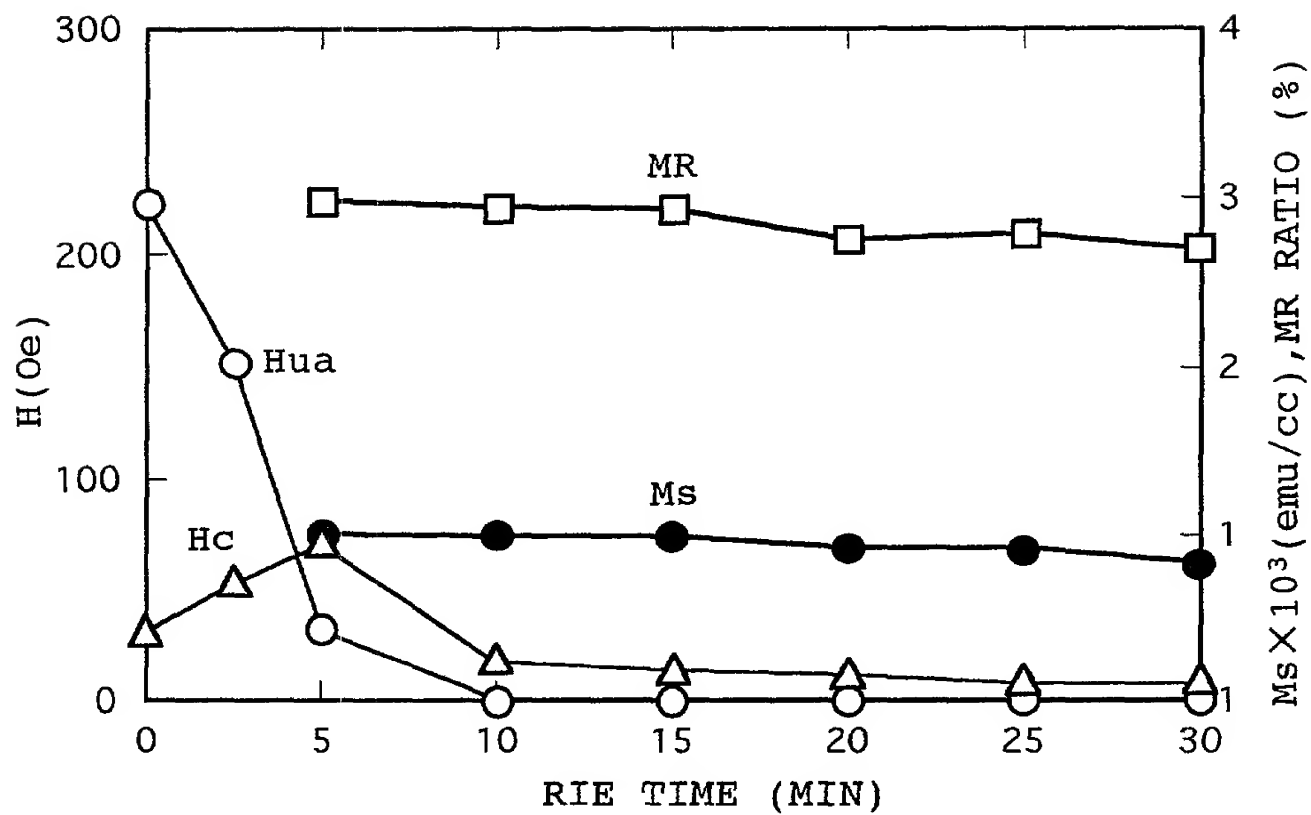
FIG. 17G' 400360



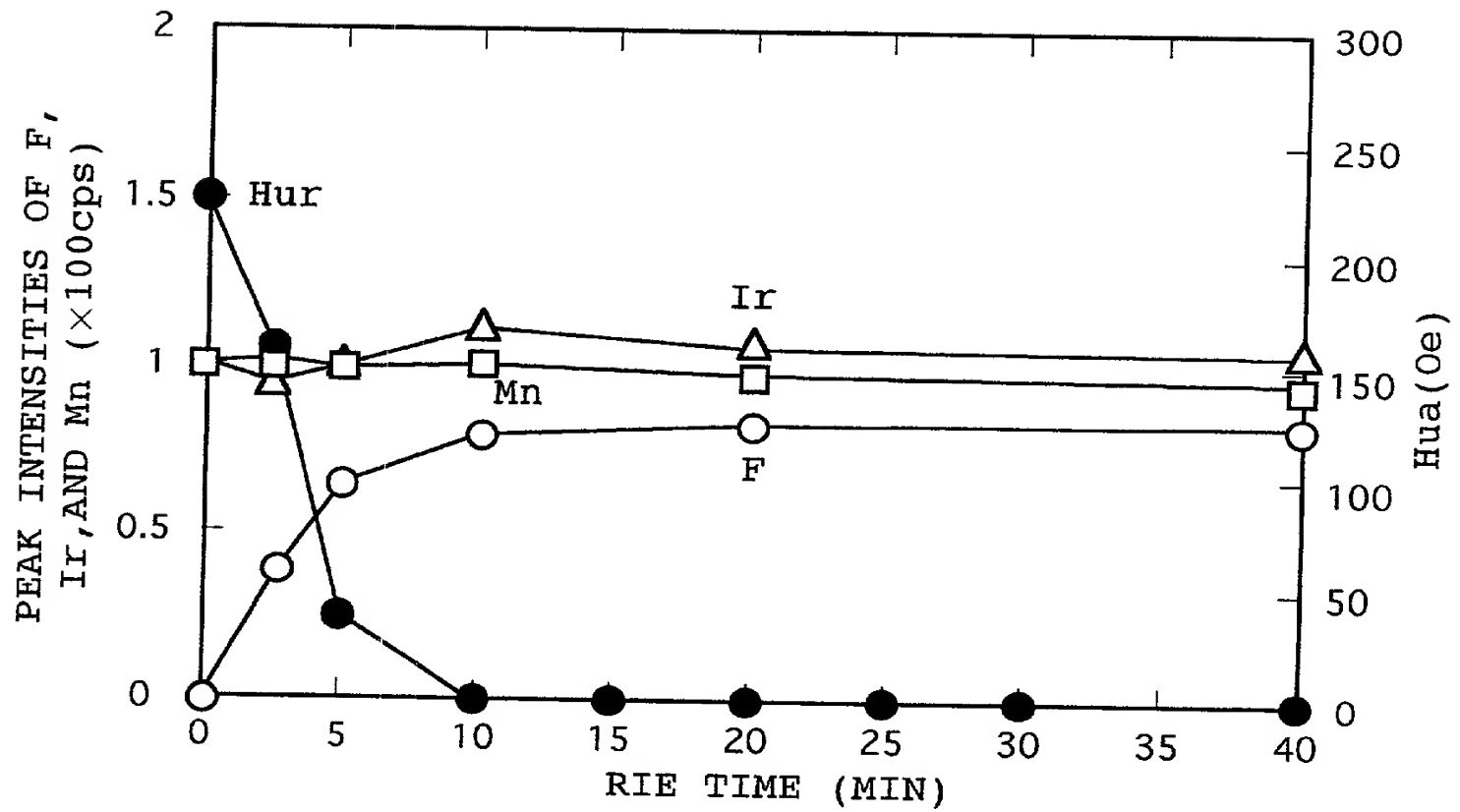
FIG. 18

Ta 5	144
IrMn 10	142
NiFe 2	140
CoFeB 1.5	
Cu 3.5	138
CoFeB 2.2	136
PdPtMn 25	134
NiFe 5	132
Ta 5	130

# FIG. 19



# FIG. 20



# FIG. 21

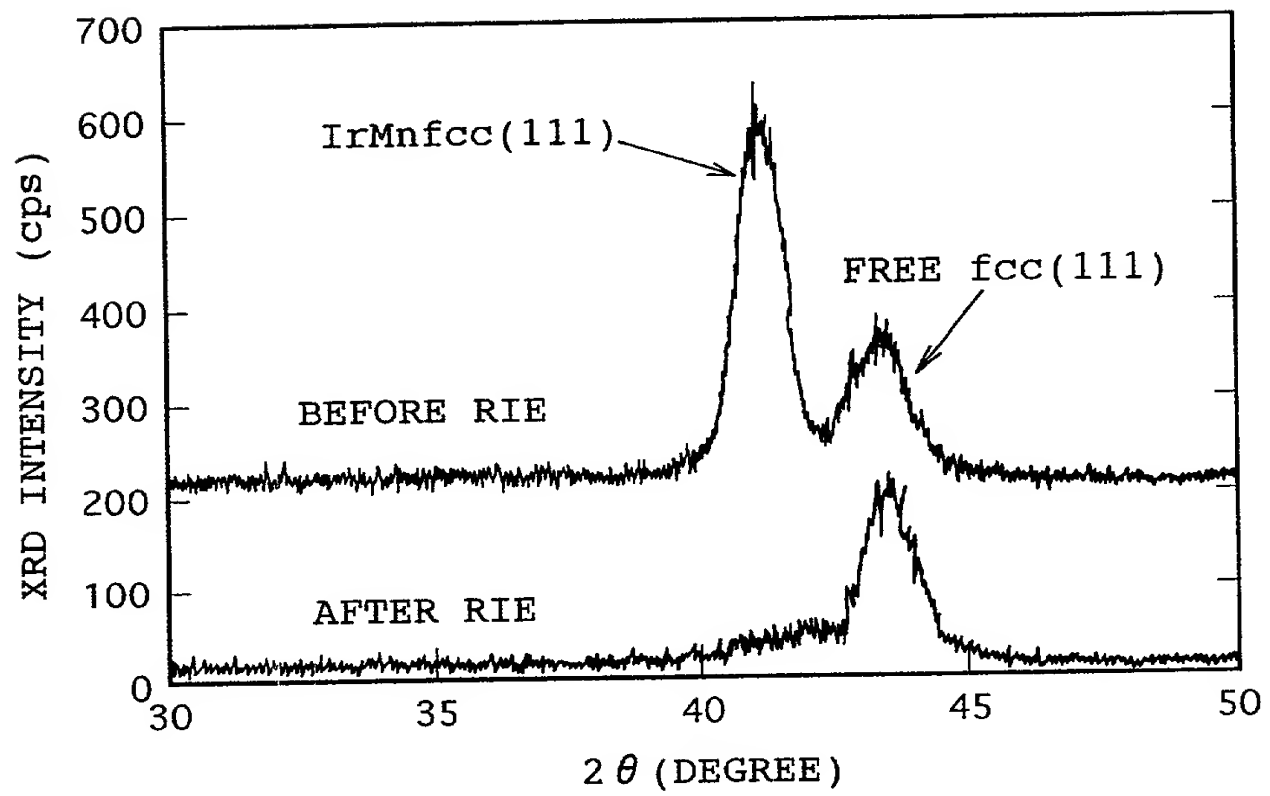


FIG. 22A

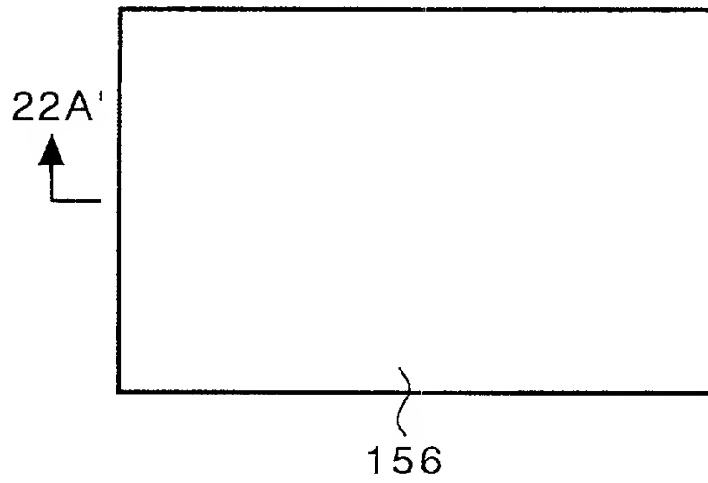


FIG. 22A'

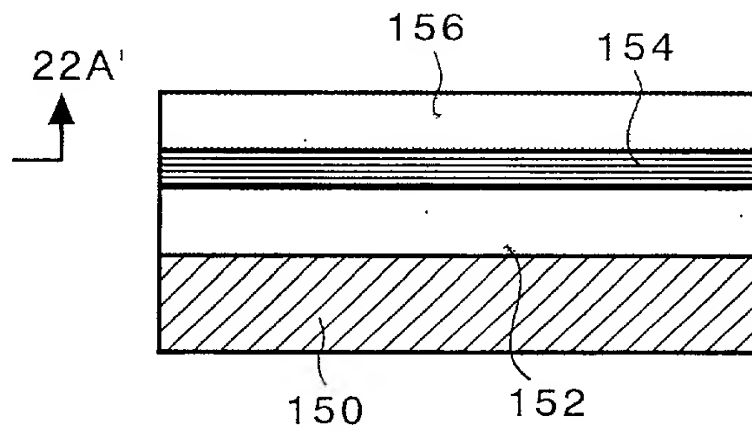


FIG. 22B

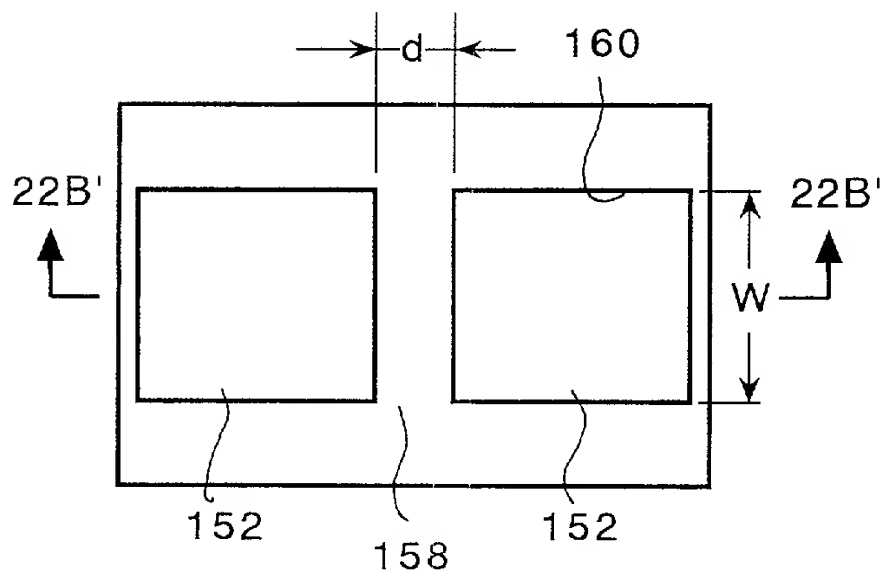


FIG. 22B'

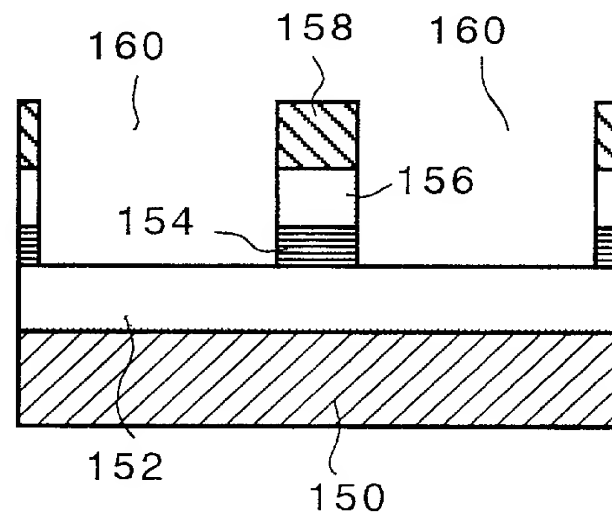


FIG. 22C

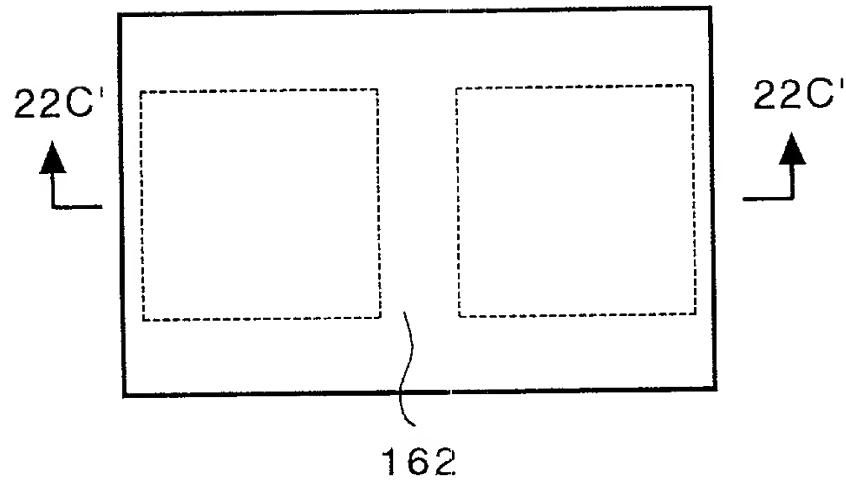


FIG. 22C'

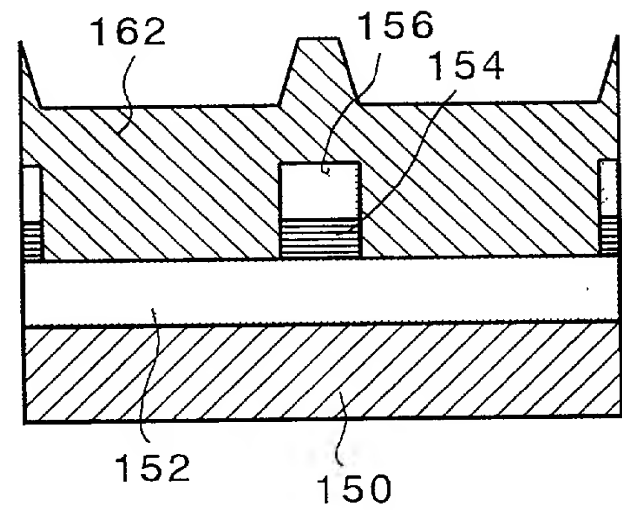


FIG. 22D

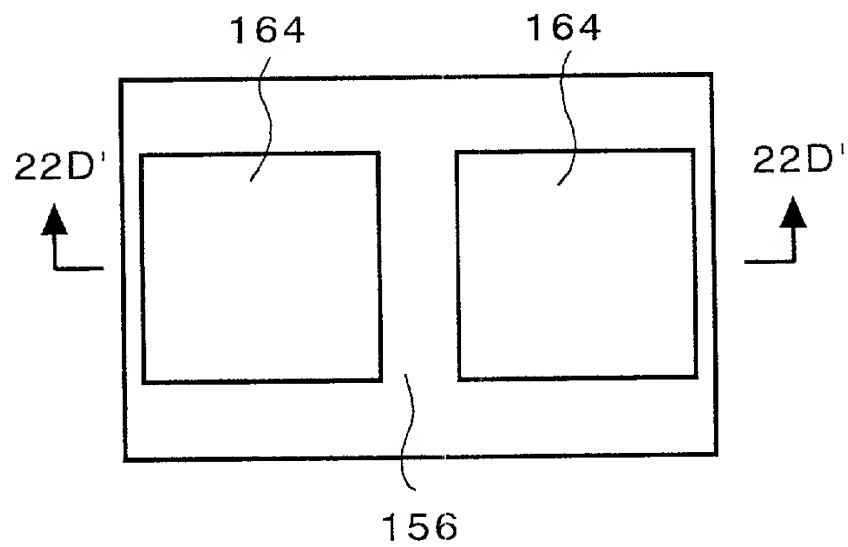


FIG. 22D'

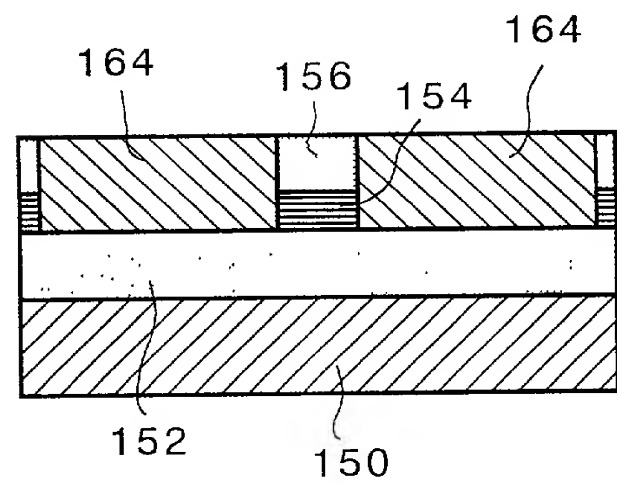


FIG. 22E

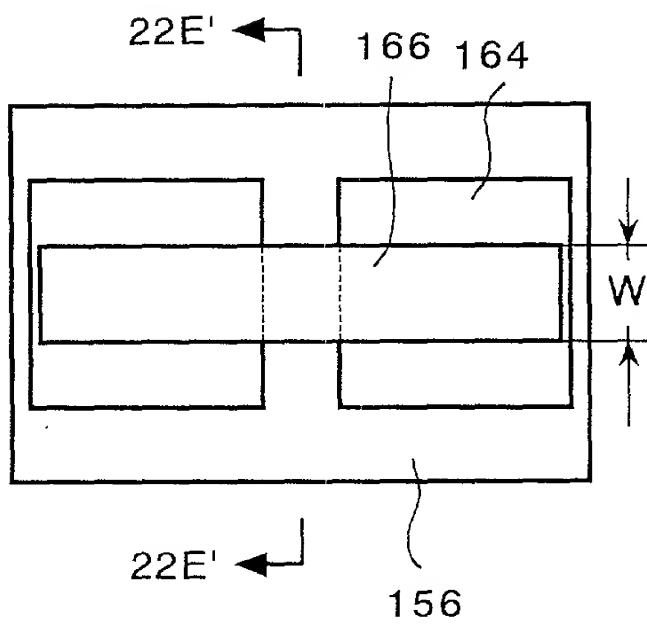


FIG. 22E'

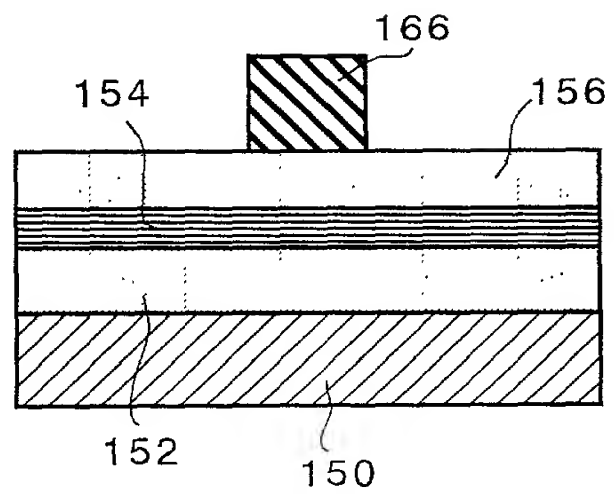


FIG. 22F

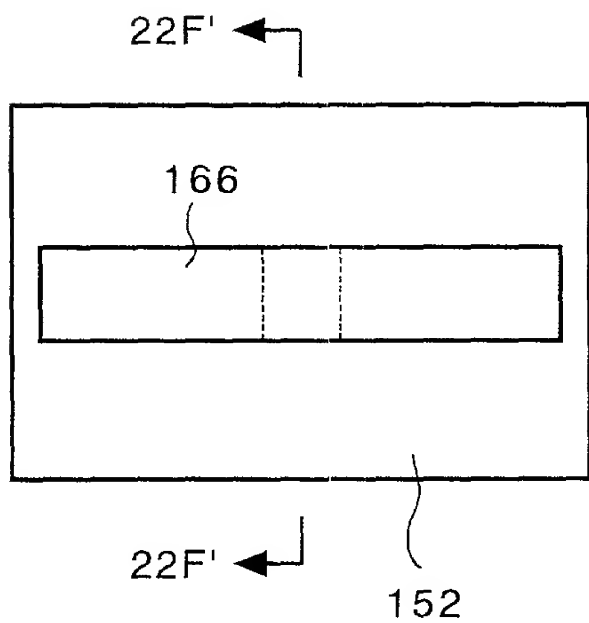


FIG. 22F'

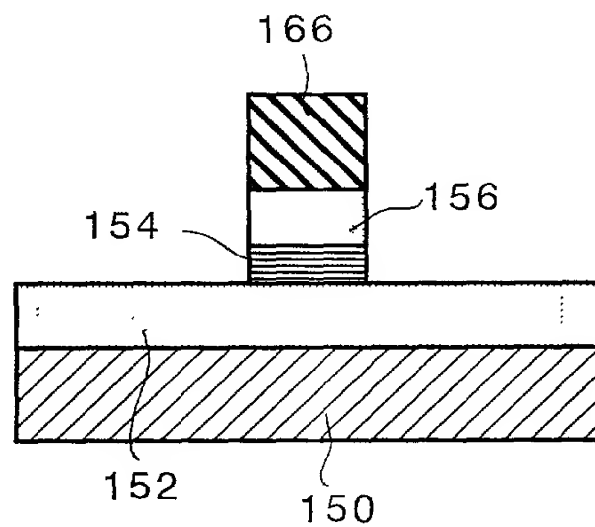


FIG. 22G

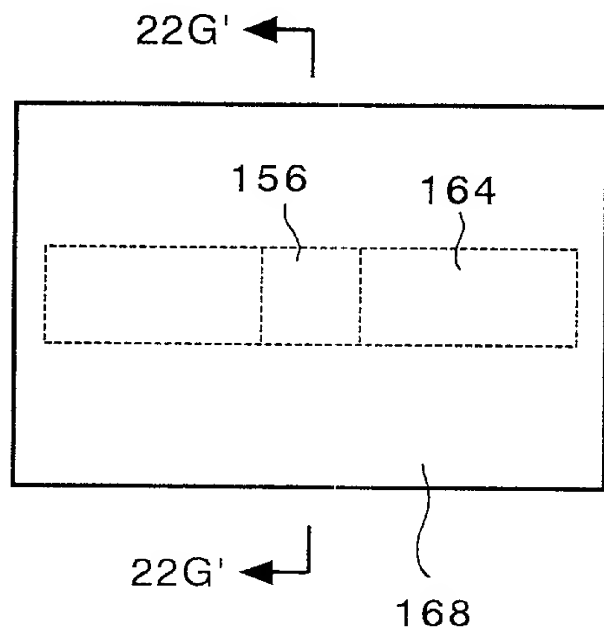


FIG. 22G'

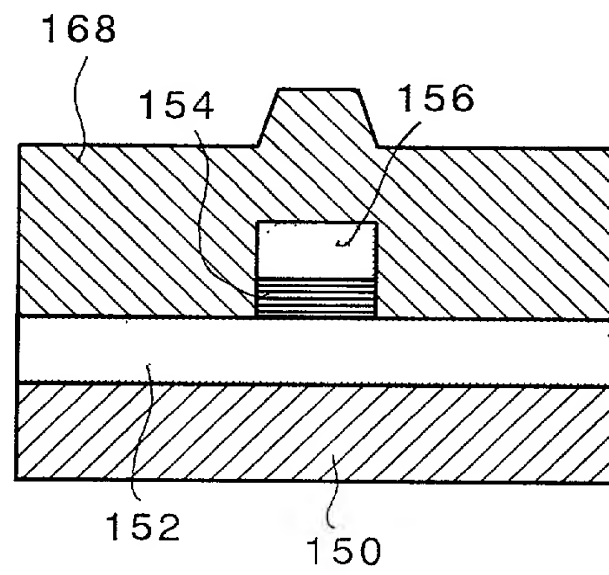


FIG. 22H

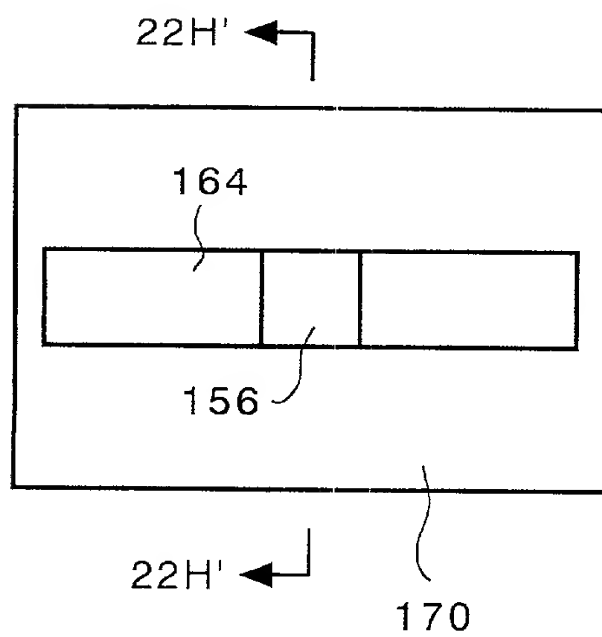
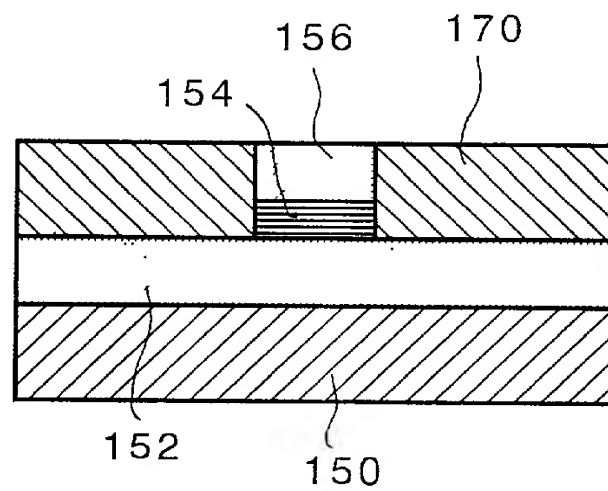
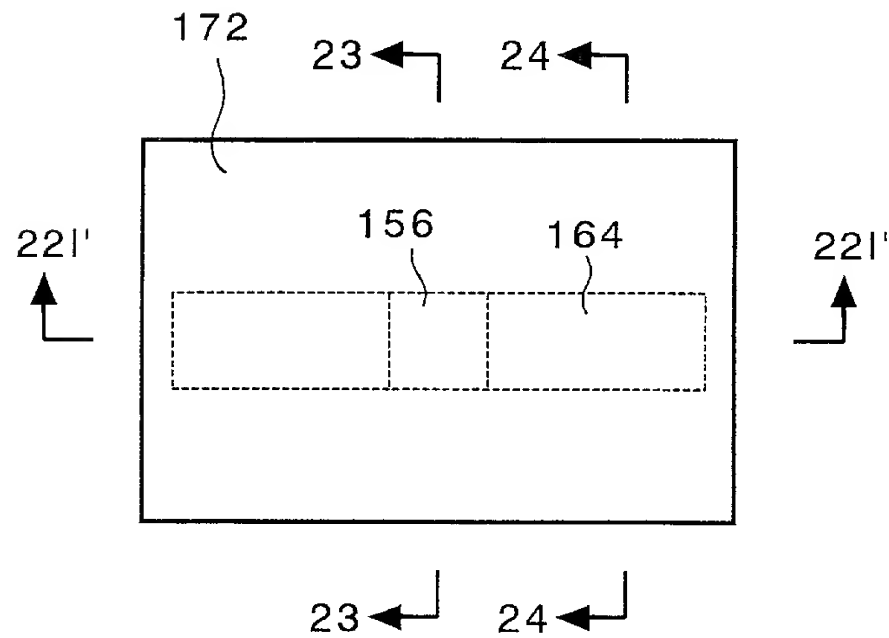


FIG. 22H'





F I G. 2 2 I



F I G. 2 2 I'

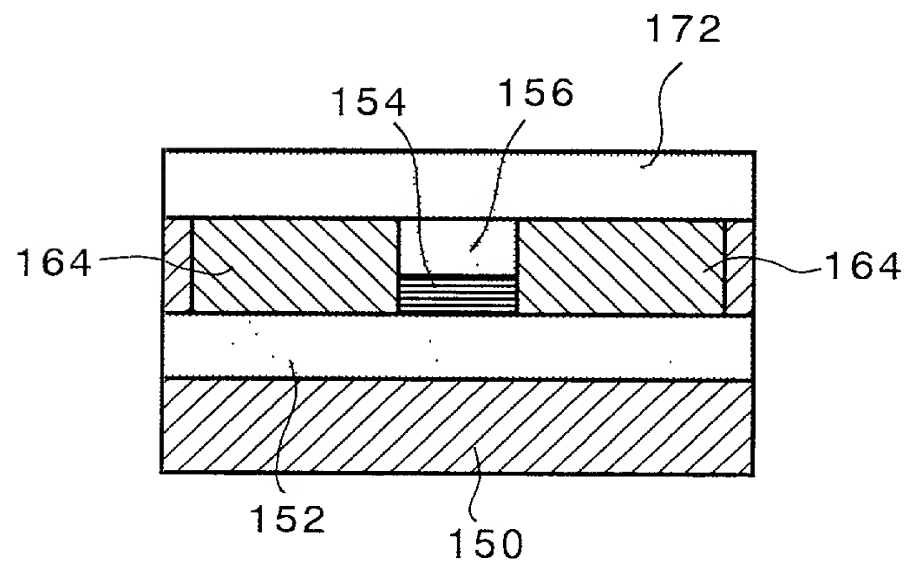


FIG. 23

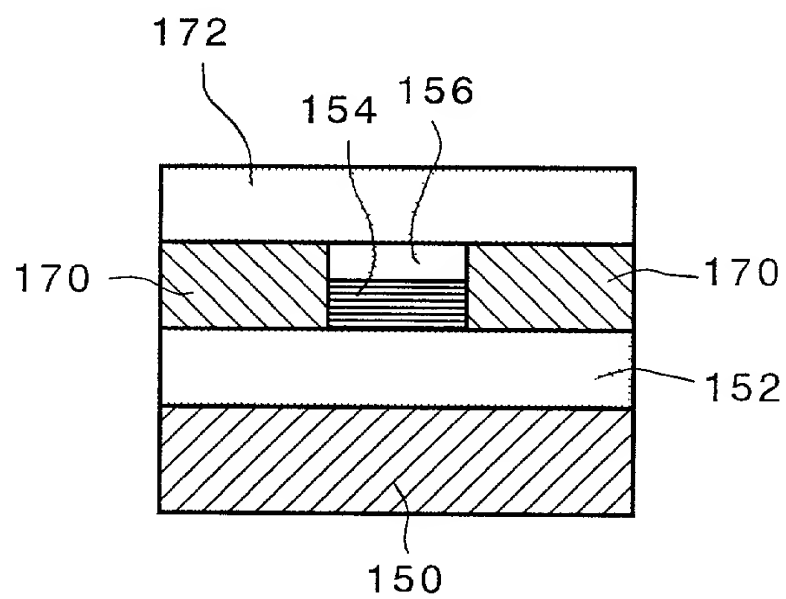
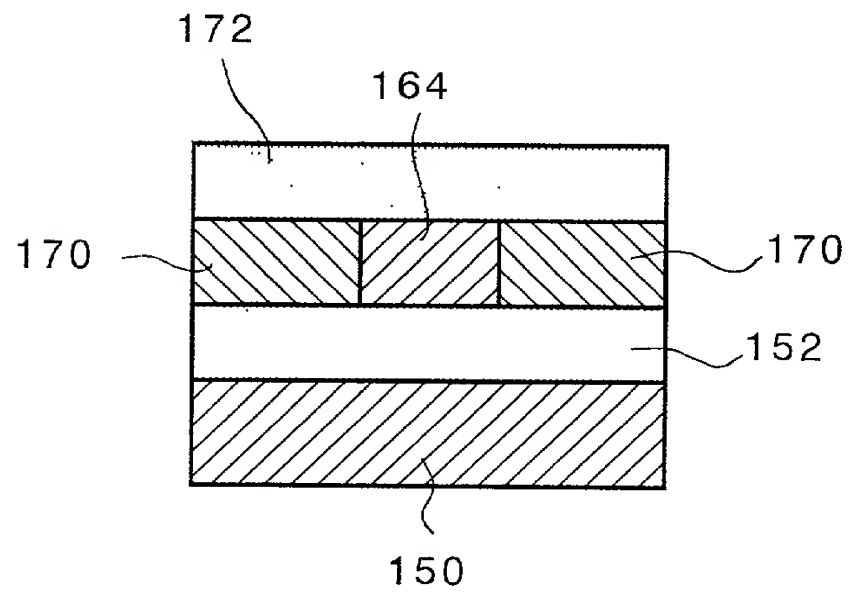
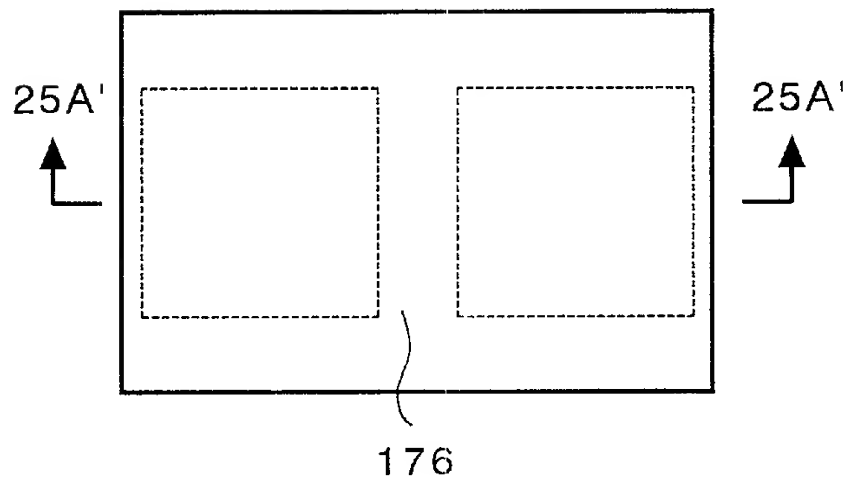


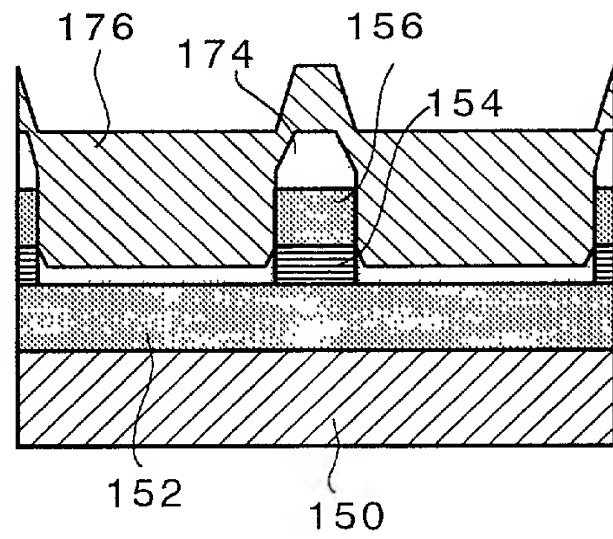
FIG. 24



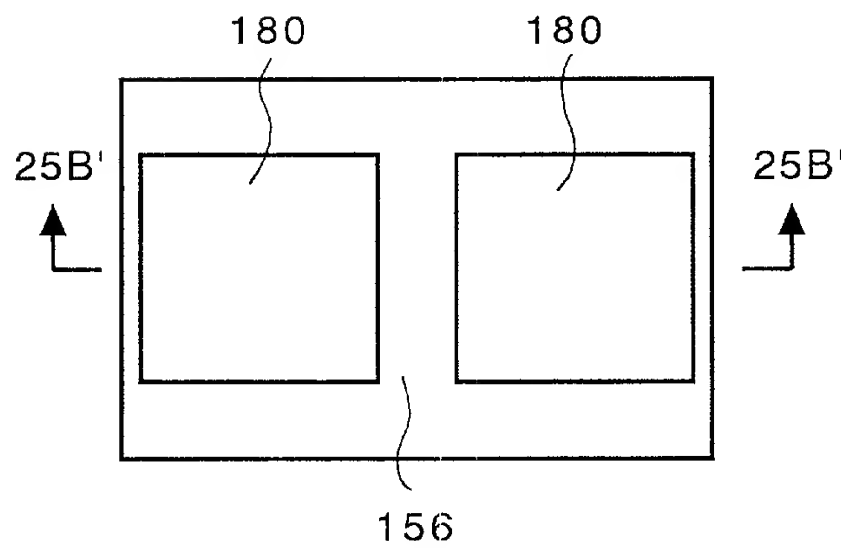
F I G. 25A



F I G. 25A'



F I G. 25B



F I G. 25B'

